GROUP 54A

CHASSIS ELECTRICAL

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WANINGS REGARDING SERVICING OF SUPPLEMENTAL RESTRAINT SYSTEM (SRS) EQUIPPED VEHICLES

⚠ WARNING

- ***Improper service or maintenance of any component of the SRS, or any SRS-related component, can lead to personal injury or death to service personnel (from inadvertent firing of the air bag) or to the driver and paassenger (from rendering the SRS inoperative).***
- ***Service or maintenance of any SRS component or SRS-related component must be performed only at an authorized MITSUBISHI dealer.***
- ***MITSUBISHI dealer personnel must thoroughly review this manual, and especially its GROUP 52B - Supplemental Restraint System (SRS) before beginning any service or maintenance of any component of the SRS or any SRS-related component.***

NOTE
The SRS includes the following components: SRS air bag control unit, SRS warning light, front impact sensors, air bag module, clock spring, and interconnecting wiring. Other SRS-related components (that may have to be removed/installed in connection with SRS service or maintenance) are indicated in the table of contents by an asterisk (*).

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BATTERY

SERVICE SPECIFICATIONS

M1541000300339

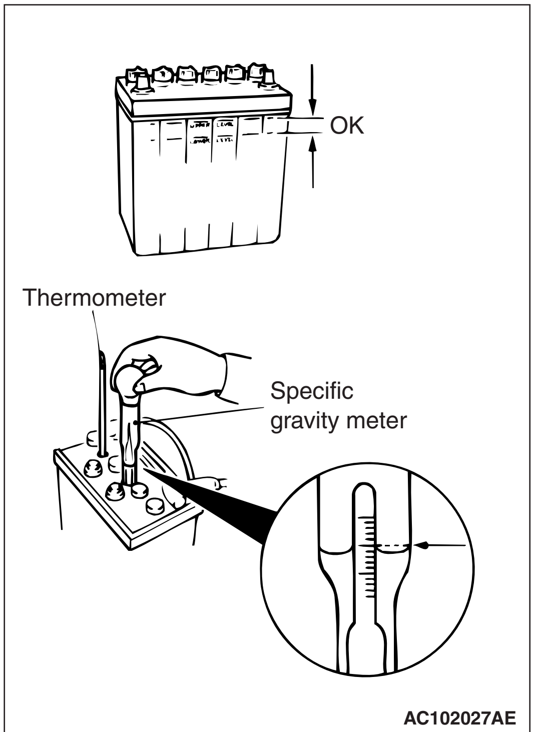
Item	Specification
Specific gravity of the battery fluid	1.220 – 1.290 (20°C)

ON-VEHICLE SERVICE

FLUID LEVEL AND SPECIFIC GRAVITY CHECK

M1541000900159

⚠ CAUTION



- **If the battery is used with the electrolyte level below the LOWER LEVEL indicator, there is the danger that explosions may occur, so add water to the battery until the electrolyte level is between the LOWER LEVEL and UPPER LEVEL indications.**
- **If too much water is added to make the level rise above the UPPER LEVEL indication, the electrolyte may leak out, so adjust so that the electrolyte level is between the LOWER LEVEL and UPPER LEVEL indications.**

1. Check that the battery electrolyte level is between the UPPER LEVEL and LOWER LEVEL indications.
2. Use a specific gravity meter and a thermometer to measure the specific gravity.

   Standard value: 1.220 – 1.290 (electrolyte temperature 20°C)

3. The specific gravity of the battery electrolyte changes according to the temperature, so the specific gravity when the electrolyte is at a temperature of 20°C can be calculated using the following formula. Use the converted value to judge whether the electrolyte is okay or not.

   D_{20} = (t – 20) X 0.0007 + Dt

   D_{20}: Specific gravity converted to a value for electrolyte temperature of 20°C

   t: Electrolyte temperature at the time of measurement

   Dt: Actual specific gravity

CHARGING

M1541001100703

⚠ CAUTION

- **The battery plugs should be removed during charging.**
- **The battery electrolyte level may rise and overflow from the battery during charging.**
- **Explosions may occur if the battery is brought close to naked flames during charging.**
- **Be careful to avoid tasks that might produce sparks or other danger while the battery is charging.**
- **After charging is complete, replace the battery plugs, pour water over the battery to rinse away any sulphuric acid, and let the battery stand to dry.**
- **Charge the battery in a well-ventilated location.**
- **Do not let the battery electrolyte temperature rise above approximately 45°C (approximately 55°C during rapid charging).**

1. Remove the battery from the vehicle.
2. The normal charging current is a value in amperes which is 1/10th of the battery capacity. If the battery needs to be charged rapidly because of reasons such as time limitations, the maximum charging current for rapid charging is the battery capacity expressed as an ampere value.

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Battery type	Capacity (5-hour rate)	Normal charging current	Rapid charging current
75D23L	52 A	5.2 A	52 A

The judgment method of a charge end

When the specific gravity of the battery electrolyte is constantly within 1.250 – 1.290 for a continuous period of one hour or more.

BATTERY TEST

M1541001200755

TEST STEPS

STEP 1. Battery no-load voltage check

(1) Illuminate the headlamp for 15 seconds.
(2) Turn off the headlamp and then leave it for about 2 minutes to stabilise the battery voltage.
(3) Remove the battery cable.
(4) Measure the battery no-load voltage.

OK: 12.4 V or more (Specific gravity 1.240)

Q: Does the measured voltage correspond with this range?
YES : Go to Step 3.
NO : Go to Step 2.

STEP 2. Battery charging

Q: Does the battery recharge?
YES : Recharge the battery at 5A (constant-current charging) and then go to Step 1 (Refer to Table 1).
NO : Go to Step 3.

STEP 3. Load test check

(1) Connect the battery tester to battery.
(2) Feed a load current through the battery (Refer to Table 1).
(3) Measure the battery voltage after 15 seconds and then eliminate a load current.
(4) Compare the measured voltage to the specified lowest voltage (Refer to Table 2).

Q: Is the measured voltage higher than the lowest voltage?
YES : The battery is normal.
NO : Replace the battery.

(TABLE 1)

Battery type	75D23L
Charging time when fully discharged [5A constant current charging] (H)	11
Load current (A)	260

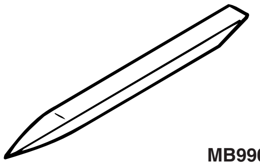
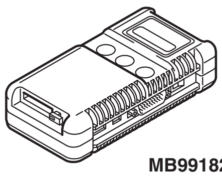
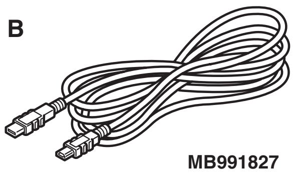
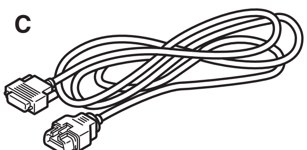
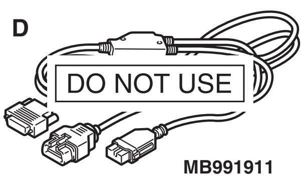
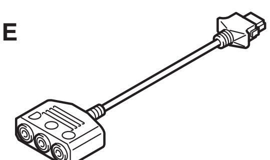
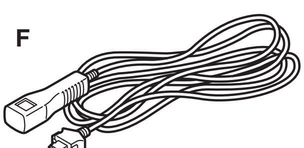
(TABLE 2)

Outside air temperature (°C)	21 or more	16 to 20	10 to 15	4 to 9	-1 to -3	-7 to -2	-12 to -8	-18 to -13
Minimum voltage (V)	9.6	9.5	9.4	9.3	9.1	8.9	8.7	8.5

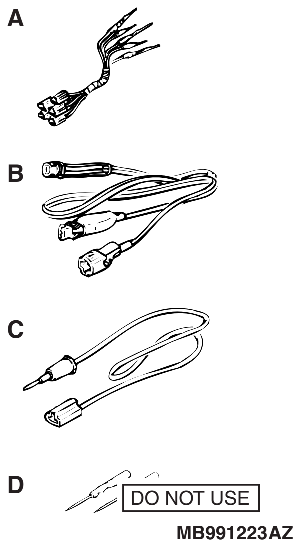
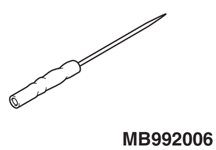
IGNITION SWITCH

SPECIAL TOOLS

M1543000603250

Tool	Number	Name	Use
 MB990784	MB990784	Ornament remover	Lower panel and Steering column cover removal
A  MB991824 B  MB991827 C  MB991910 D  MB991911 E  MB991825 F  MB991826 MB991955	MB991955 A: MB991824 B: MB991827 C: MB991910 D: MB991911 E: MB991825 F: MB991826	M.U.T.-III sub-assembly A: Vehicle communication interface (V.C.I.) B: M.U.T.-III USB cable C: M.U.T.-III Main harness A (Vehicles with CAN communication system) D: M.U.T.-III Main harness B (Vehicles without CAN communication system) E: M.U.T.-III Measurement adapter F: M.U.T.-III Trigger harness	Diagnosis code check ⚠ CAUTION **For vehicles with CAN communication, use M.U.T.-III main harness A to send simulated vehicle speed. If you connect M.U.T.-III main harness B instead, the CAN communication does not function correctly.**

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Tool	Number	Name	Use
	MB991223 A: MB991219 B: MB991220 C: MB991221 D: MB991222	Harness set A: Test harness B: LED harness C: LED harness adapter D: Probe	Making voltage and resistance measurements during troubleshooting A: Connect pin contact pressure inspection B: Power circuit inspection C: Power circuit inspection D: Commercial tester connection
	MB992006	Extra fine probe	Continuity check and voltage measurement at harness wire or connector

TROUBLESHOOTING

IGNITION SWITCH

M1543000701303

The ignition switch is controlled by the Smart Wiring System (SWS). For troubleshooting, refer to respective Groups below.

- Not using SWS monitor: GROUP 54B, Troubleshooting P.54B-35.
- Using SWS monitor: GROUP 54C, Troubleshooting P.54C-29.

IMMOBILISER

STANDARD FLOW OF DIAGNOSIS TROUBLESHOOTING

Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points P.00-8.

DIAGNOSTIC FUNCTION

M1543007000766

HOW TO READ DIAGNOSIS CODE

Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points P.00-7.

HOW TO ERASE DIAGNOSIS CODE

Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points P.00-7.

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ENCRYPTED CODE REGISTRATION CRITERIA TABLE

M1543026000260

The ignition key contains a transponder (small transmitter), which retains an unique encrypted code. Under any of the conditions below, the encrypted code must be registered in the immobiliser-ECU again. The immobiliser-ECU can retain maximum eight different encrypted codes. This means that maximum eight ignition keys can be registered.

Component to be replaced	Engine-ECU <M/T> or engine-CVT-ECU <CVT>	Immobilizer-ECU	Ignition key
When Engine-ECU <M/T> or engine-CVT-ECU <CVT> is replaced	–	Must be replaced	Must be replaced
			All ignition keys must be registered again
When immobilizer-ECU is replace	Must not be replaced	–	Must not be replaced
			All ignition keys must be registered again
When ignition key is added	Must not be replaced	Must not be replaced	• Additional ignition key must be registered • All ignition keys must be registered again
When ignition key is lost	Must not be replaced	Must not be replaced	All the ignition keys other than the lost one must be registered again

CHART CLASSIFIED BY DIAGNOSIS CODES

M1543007100729

⚠ CAUTION

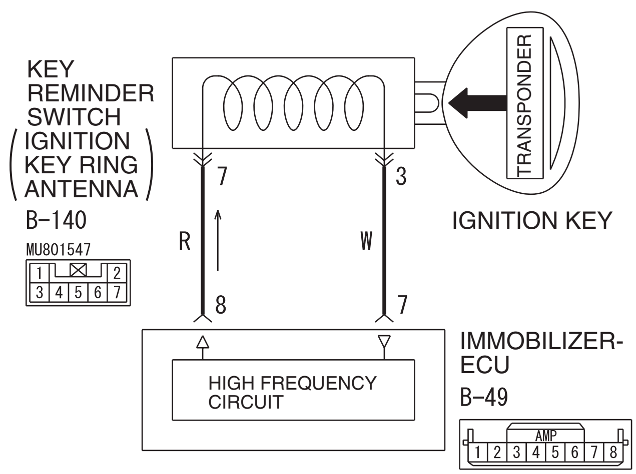
During diagnosis, a diagnosis code associated with other system may be set when the ignition switch is turned on with connector(s) disconnected. On completion, confirm all systems for diagnosis code(s). If diagnosis code(s) are set, erase them all.

Code No.	Diagnosis contents	Reference page
11	Transponder communication system or radio interference of encrypted code.	P.54A-9
12	Encrypted codes are not the same or are not registered.	P.54A-12

DIAGNOSTIC TROUBLE CODE PROCEDURES

Code No.11 Transponder Communication System or Radio Interference of Encrypted Code.

Ignition Key Ring and Immobilizer-ECU Circuit



Wire colour code
B : Black LG : Light green G : Green L : Blue W : White Y : Yellow SB : Sky blue
BR : Brown O : Orange GR : Gray R : Red P : Pink V : Violet

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DIAGNOSIS CODE SET CONDITIONS

- Diagnosis code 11 may be set if other ignition keys or the equipment which trigger a radio interference are in the vicinity of the vehicle as it is being started.
- The transponder's encrypted code is not sent to the immobiliser-ECU immediately after the ignition switch is turned to "ON" position.

NOTE: Diagnosis code 11 is always set together with MPI system diagnosis code P0513.

POSSIBLE CAUSES

- Radio interference of the encrypted code
- Malfunction of ignition key
- Malfunction of immobiliser-ECU

DIAGNOSIS PROCEDURE

STEP 1. Check for presence of other key near the key in the ignition.

Q: Is there any other key near the key in the ignition?

YES : Move the other key well away from key being used. Retest the system.

NO : Go to Step 2.

STEP 2. Check for presence of the equipment which trigger a radio interference.

Q: Is there any equipment which the customer attached? For example, a plug-in air freshener and so on.

YES : Remove or disconnect the equipment. Retest the system.

NO : Go to Step 3.

STEP 3. Check that the engine start using the spare ignition key which encrypted code has been registered.

Q: Does the engine start using the spare ignition key for which the encrypted code has been registered?

YES : Replace the ignition key that does not work. Then register the password (secret key code) and encrypted code P.54A-23. Retest the system.

NO : Go to Step 4.

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STEP 4. M.U.T.-III diagnosis code

Check that the immobiliser-ECU sets a diagnosis code.

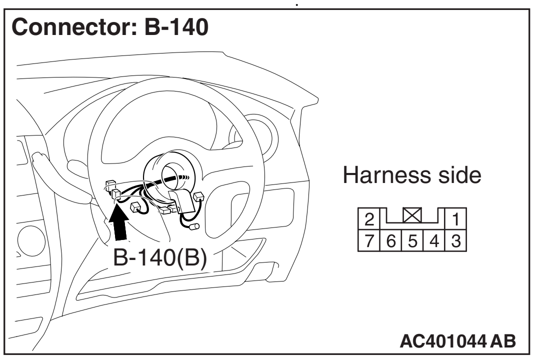
Q: Is the diagnosis code set?

YES (diagnosis cede No.11 is set) : Go to Step 5.

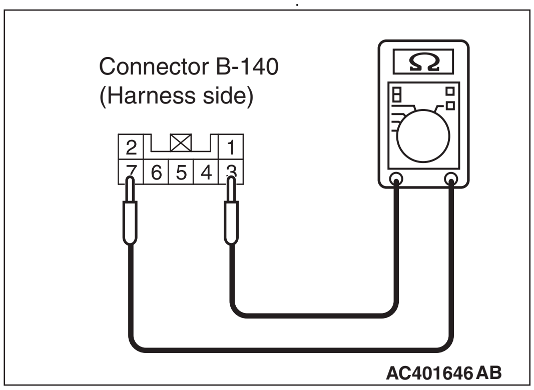
YES (diagnosis cede No.12 is set) : Code No.12 The ignition key is unregistered or encrypted codes do not match. Refer to P.54A-12.

NO : The procedure is complete.

STEP 5. Resistance measurement the key reminder switch connector B-140.



Disconnect the key reminder switch connector B-140.



Resistance between key reminder switch connector B-140 terminal No.3 and No.7.

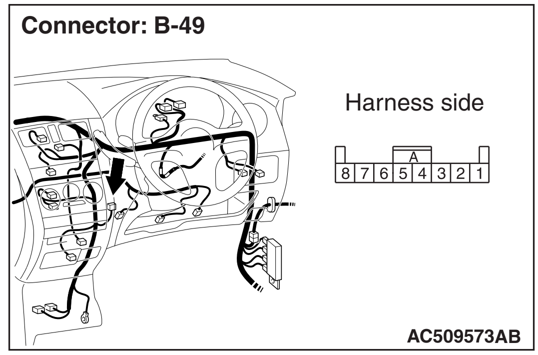
OK: Continuity exists (2 Ω or less)

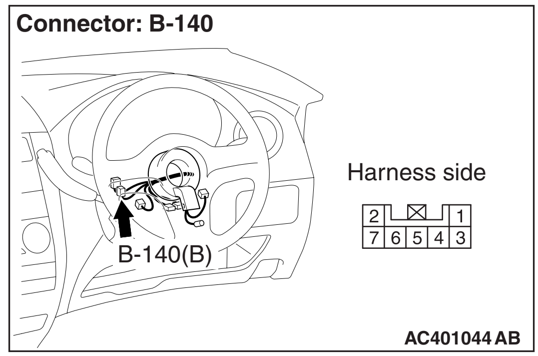
Q: Is the check result normal?

YES : Go to Step 6.

NO : Replace the ignition key ring antenna. Retest the system.

STEP 6. Connector check: Immobiliser-ECU connector B-49 and key reminder switch connector B-140





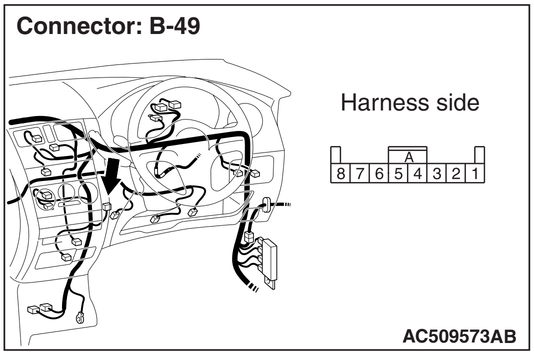
Q: Is the check result normal?

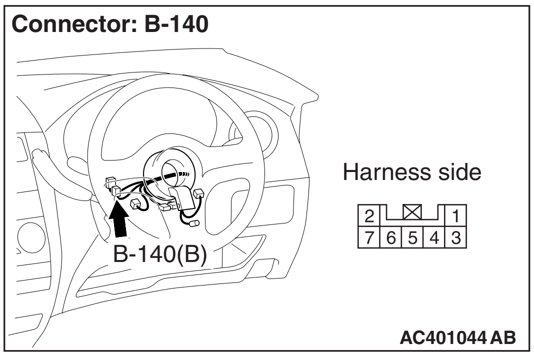
YES : Go to Step 7.

NO : Repair or replace the defective connector.

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STEP 7. Check the wiring harness between immobiliser-ECU connector B-49 (terminal 7 and 8) and key reminder switch connector B-140 (terminal 3 and 7).





Q: Are the wiring harness between immobiliser-ECU connector B-49 (terminal 7 and 8) and key reminder switch connector B-140 (terminal 3 and 7) in good condition?

YES : . Replace the immobiliser-ECU and then register the password (secret key code) and encrypted code (Refer to P.54A-23). Retest the system.

NO : . Repair the wiring harness.

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Code No.12 Encrypted Codes are Not the Same or Not Registered.

DIAGNOSIS CODE SET CONDITIONS

The encrypted code sent by the transponder is not the same encrypted code which is registered in the immobiliser-ECU.

NOTE: Diagnosis code 12 is always set together with MPI system diagnosis code P0513.

POSSIBLE CAUSES

- The encrypted code in the ignition key has not been properly registered
- The encrypted code in the ignition key is initial value
- Malfunction of immobiliser-ECU

DIAGNOSIS PROCEDURE

Resister the encrypted code.

Q: Was the encrypted code registered?

YES : The procedure is complete.

NO : Replace the immobiliser-ECU and register the password (secret key code) and on encrypted code (Refer to P.54A-23).

Trouble symptom chart

M1543007201503

⚠ CAUTION

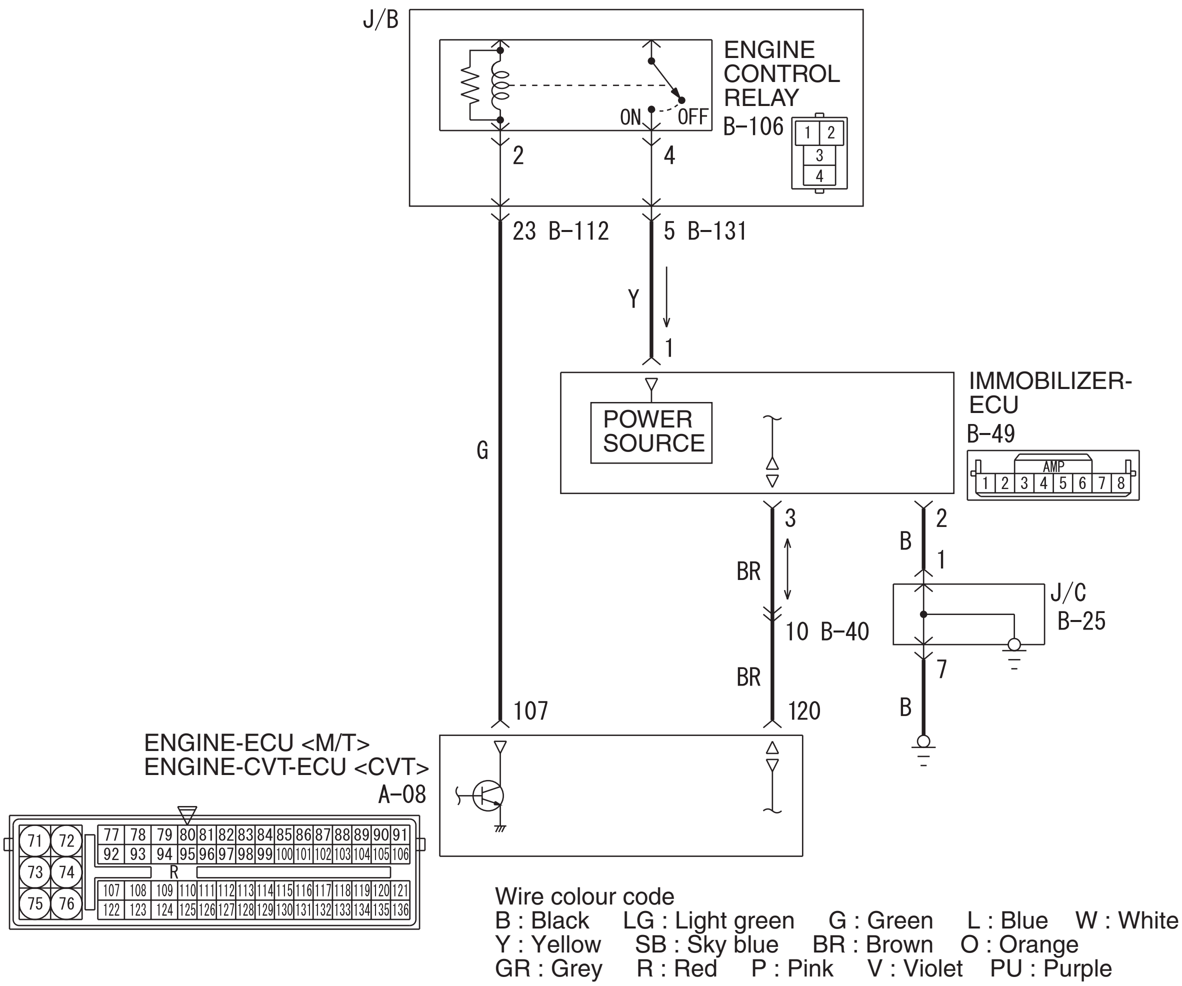
During diagnosis, a diagnosis code associated with other system may be set when the ignition switch is turned on with connector(s) disconnected. On completion, confirm all systems for diagnosis code(s). If diagnosis code(s) are set, erase them all.

Trouble symptom	Inspection procedure No.	Reference page
MPI system-related diagnostic code No.P0513 is set, and communication between M.U.T.-III and immobiliser cannot be established.	1	P.54A-13
The ignition key cannot be registered with the M.U.T.-III.	2	P.54A-16
The engine does not start. (cranking occurs but initial combustion does not)	3	P.54A-18
Check the power supply and earth circuit to the immobiliser-ECU.	4	P.54A-19

SYMPTOM PROCEDURES

Inspection procedure: 1 MPI System-related Diagnostic Code No.P0513 is Set, and Communication Between M.U.T.-III and Immobiliser cannot be Established.

Immobilizer-ECU Power Source, Earth and Engine-ECU <M/T> or Engine-CVT-ECU <CVT> Communication Line Circuit



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COMMENTS ON TROUBLE SYMPTOM

The immobiliser-ECU communicates with the M.U.T.-III via the engine-ECU <M/T> or engine-CVT-ECU <CVT>. The communication error between the immobiliser-ECU and the engine-ECU <M/T> or engine-CVT-ECU <CVT> may be occurred.

POSSIBLE CAUSES

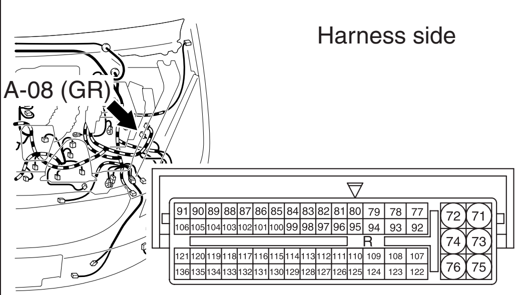
- Malfunction of immobiliser-ECU power supply and earth
- Damaged harness wires between the engine-ECU <M/T> or engine-CVT-ECU <CVT> and the immobiliser-ECU

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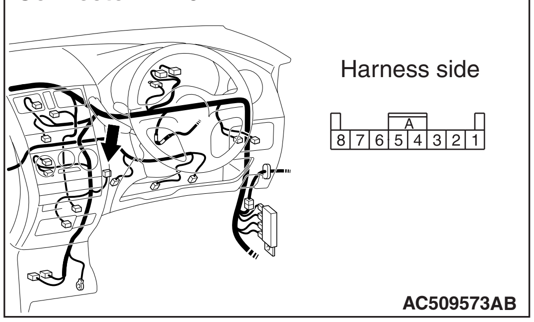
DIAGNOSTIC PROCEDURE

Step 1. Connector check: Immobiliser-ECU connector B-49 and engine-ECU <M/T> or engine-CVT-ECU <CVT> connector A-08

Connector: A-08



Connector: B-49



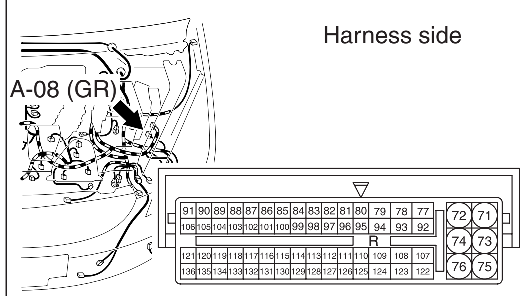
Q: Are immobiliser-ECU connector B-49 and engine-ECU <M/T> or engine-CVT-ECU <CVT> connector A-08 in good condition?

YES : Go to Step 2.

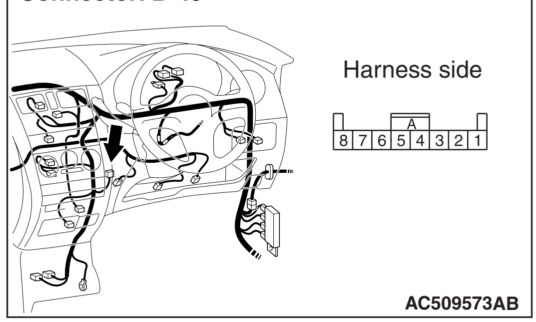
NO : Repair the defective connector.

Step 2. Check the harness wires between immobiliser-ECU connector B-49 (terminal 3) and engine-ECU <M/T> or engine-CVT-ECU <CVT> connector A-08 (terminal 120).

Connector: A-08

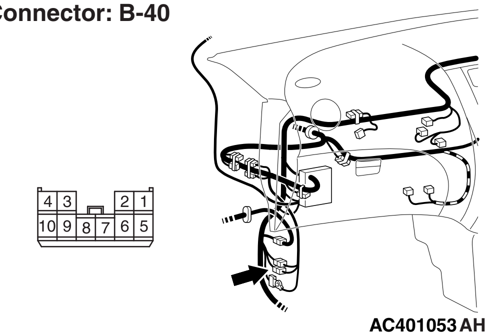


Connector: B-49



NOTE:

Connector: B-40



Prior to the wiring harness inspection, check intermediate connector B-40, and repair if necessary.

Q: Are the harness wires between immobiliser-ECU connector B-49 (terminal 3) and engine-ECU <M/T> or engine-CVT-ECU<CVT> connector A-08 (terminal 120) in good condition?

YES : Go to Step 3.

NO : Repair the wiring harness.

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Step 3. Check the immoblizer-ECU power supply circuit and earth circuit (Refer to Inspection Procedure 4 "Check the immoblizer ECU power supply circuit and earth circuit" P.54A-19.)

Q: Is the check result normal?

YES : Go to Step 4.

NO : Repair the power supply and earth circuit to the immobiliser-ECU.

Step 4. Retest the system.

Check that immobiliser-ECU communicates with the M.U.T.-III.

Q: Is the check result normal?

YES : Intermittent Malfunction (Refer to GROUP 00 – How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-13.)

NO : Replace the immobiliser-ECU, and then go to Step 5.

Step 5. Retest the system.

Check that immobiliser-ECU communicates with the M.U.T.-III.

Q: Is the check result normal?

YES : The procedure is complete.

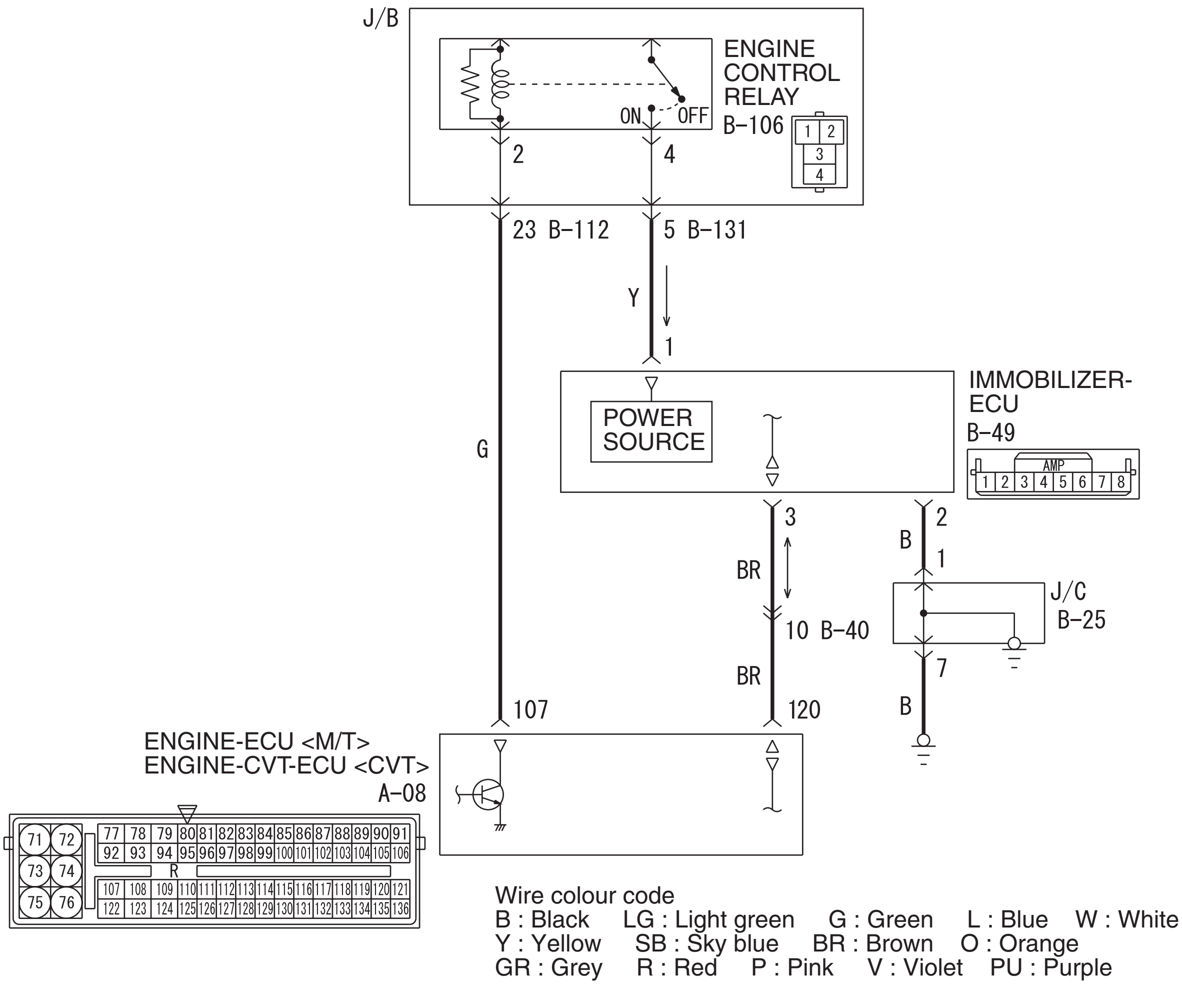
NO : Replace the engine-ECU <M/T> or engine-CVT-ECU <CVT>.

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INSPECTION PROCEDURE 2: The Ignition Key cannot be Registered with the M.U.T.-III.

Immobilizer-ECU Power Source, Earth and Engine-ECU <M/T> or Engine-CVT-ECU <CVT> Communication Line Circuit



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CIRCUIT OPERATION

Refer to P.54A-13.

COMMENTS ON TROUBLE SYMPTOM

If only some ignition keys cannot be registered, the ignition key itself may be defective. If no ignition key can be registered, the immobiliser-ECU may be defective.

POSSIBLE CAUSES

- Malfunction of ignition key
- Damaged harness wires and connectors
- Malfunction of immobiliser-ECU
- Malfunction of engine-ECU <M/T> or engine-CVT-ECU <CVT>

DIAGNOSTIC PROCEDURE

STEP 1. Check that no ignition key can be registered.

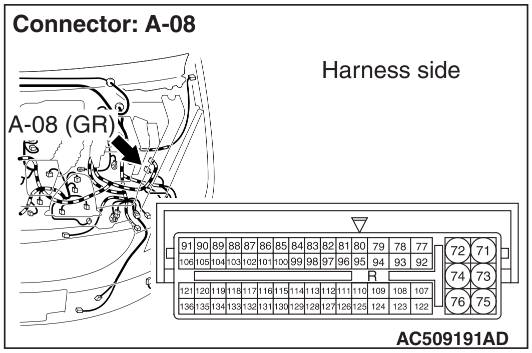
Q: Can any of the ignition keys be registered?

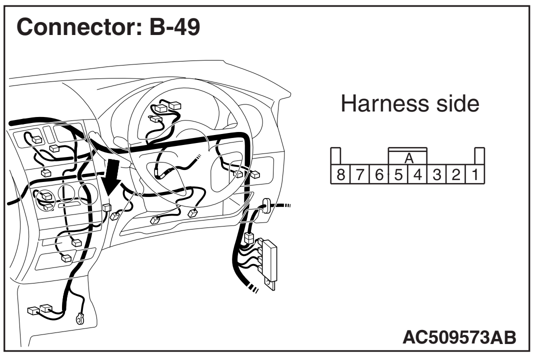
YES : Replace the ignition key that cannot be registered with new registered ignition key.

NO : Go to Step 2.

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Step 2. Connector check: Immobiliser-ECU connector B-49 and engine-ECU <M/T> or engine-CVT-ECU <CVT> connector A-08



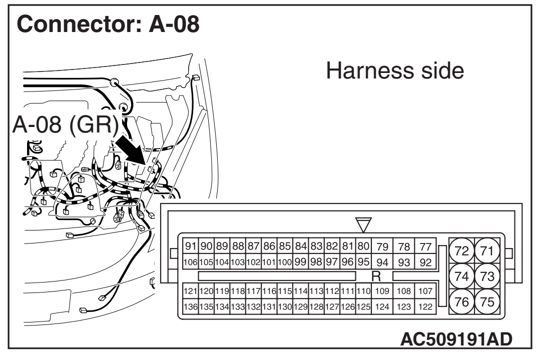


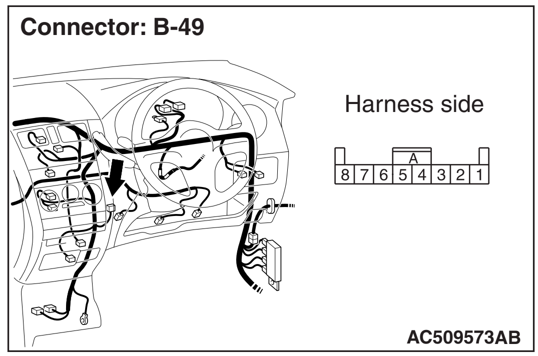
Q: Are immobiliser-ECU connector B-49 and engine-ECU <M/T> or engine-CVT-ECU <CVT> connector A-08 in good condition?

YES : Go to Step 3.

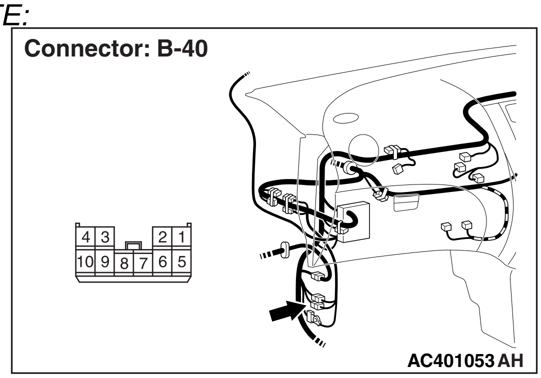
NO : Repair the defective connector.

Step 3. Check the harness wires between immobiliser-ECU connector B-49 (terminal 3) and engine-ECU <M/T> or engine-CVT-ECU <CVT> connector A-08 (terminal 120).





NOTE:



Prior to the wiring harness inspection, check intermediate connector B-40, and repair if necessary.

Q: Are the harness wires between immobiliser-ECU connector B-49 (terminal 3) and engine-ECU <M/T> or engine-CVT-ECU <CVT> connector A-08 (terminal 120) in good condition?

YES : Go to Step 4.

NO : Repair the wiring harness.

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Step 4. Check the communication with M.U.T.-III

Q: Can the system communicate with the M.U.T.-III?

YES : Go to Step 5.

NO : Refer to INSPECTION PROCEDURE 1 "MPI system-related diagnostic code No.P0513 is set, and communication between M.U.T.-III and immobiliser cannot be established P.54A-13"

Step 5. M.U.T.-III diagnosis code

Check whether the engine immobilizer system-related diagnosis code is set.

Q: Is the diagnosis code set?

YES : Refer to P.54A-8.

NO : Go to Step 6.

Step 6. Retest the system.

Check that the ignition key can be registered.

Q: Is the check result normal?

YES : The procedure is complete.

NO : Replace the immobilizer ECU, and then go to Step 7 .

Step 7. Retest the system.

Check that the ignition key can be registered.

Q: Is the check result normal?

YES : The procedure is complete.

NO : Replace the engine-ECU <M/T> or engine-CVT-ECU <CVT>.

Inspection procedure: 3 The Engine does not Start. (Cranking Occurs but Initial Combustion does not)

COMMENTS ON TROUBLE SYMPTOM

If the fuel injection does not work, the immobiliser-ECU and the MPI system may be defective. It is no problem with the malfunction above when the engine is started with unregistered ignition key.

POSSIBLE CAUSES

- Malfunction of MPI system
- Malfunction of immobiliser-ECU

DIAGNOSIS PROCEDURE

Step 1. Battery voltage check

Measure the battery voltage when cranking.

OK: 8 V or more

Q: Is the check result normal?

YES : Go to Step 2.

NO : Check the battery. Refer to P.54A-5.

Step 2. M.U.T.-III other system diagnosis code

Check whether the MPI system-related diagnosis code is set.

Q: Is the diagnosis code set?

YES : Refer to GROUP 13A, Troubleshooting P.13A-20.

NO : Go to Step 3.

Step 3. M.U.T.-III diagnosis code

Check whether the engine immobiliser system-related diagnosis code is set.

Q: Is the diagnosis code set?

YES : Refer to P.54A-8.

NO : Go to Step 4.

Step 4. Check that the engine starts.

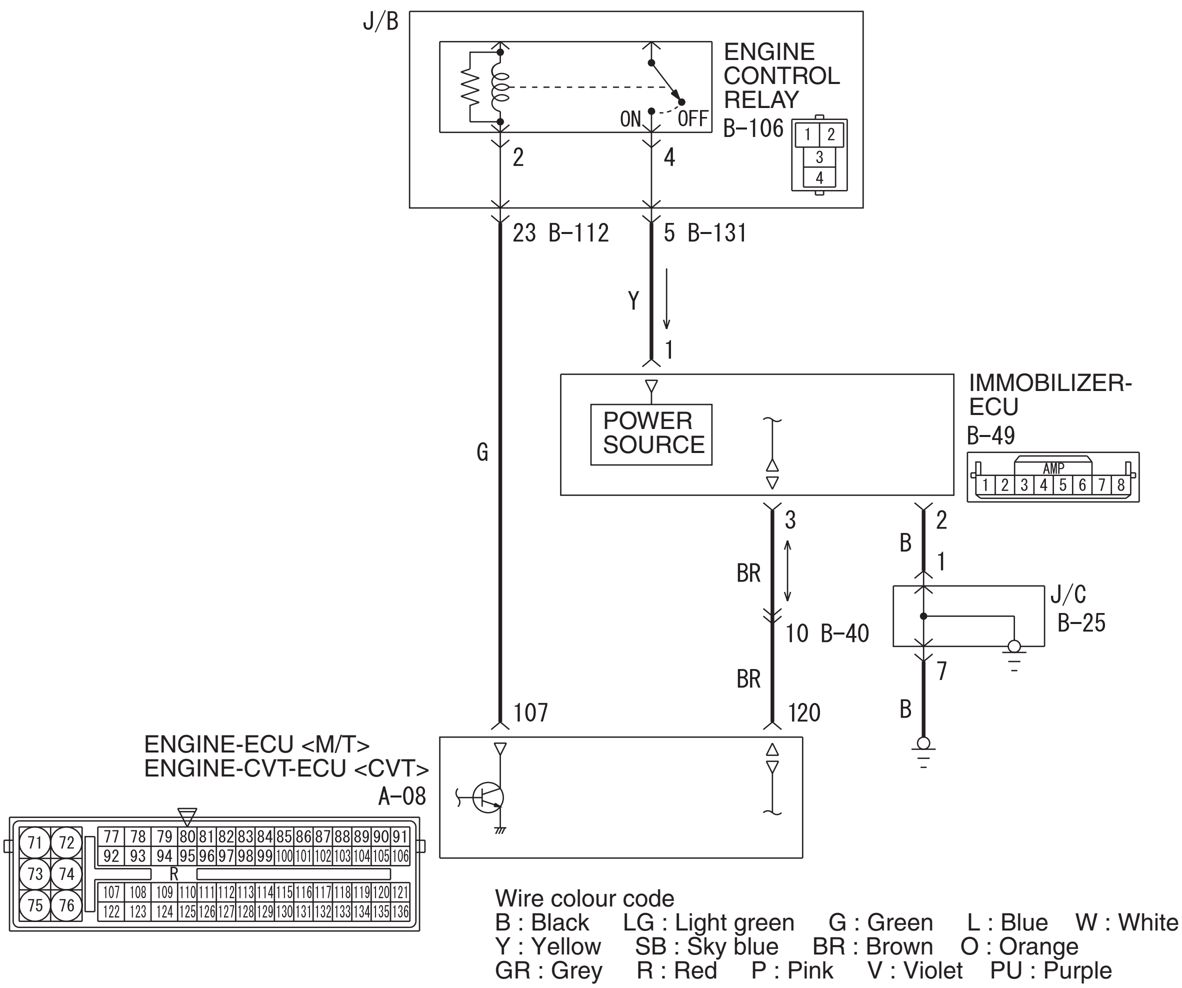
Q: Does the engine start?

YES : The procedure is complete.

NO : Refer to GROUP 13A, Troubleshooting P.13A-20. Replace the immobiliser-ECU when the cause of the failure cannot tracked down by performing the troubleshooting.

Inspection procedure: 4 Check the Power Supply and Earth Circuit to the Immobiliser-ECU.

Immobilizer-ECU Power Source, Earth and Engine-ECU <M/T> or Engine-CVT-ECU <CVT> Communication Line Circuit



AC601476 AB

CIRCUIT OPERATION

Refer to P.54A-13.

COMMENTS ON TROUBLE SYMPTOM

The power supply and earth circuit to the immobi-liser-ECU may be defective.

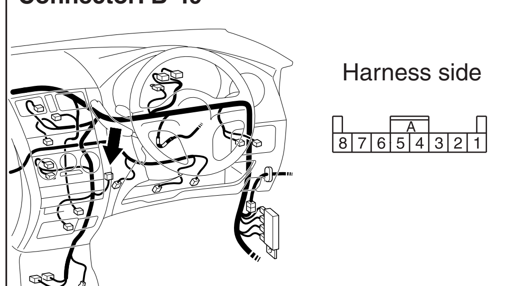
POSSIBLE CAUSES

- Damaged harness wires and connectors

DIAGNOSTIC PROCEDURE

Step 1. Connector check: Immobiliser-ECU connector B-49

Connector: B-49



AC509573AB

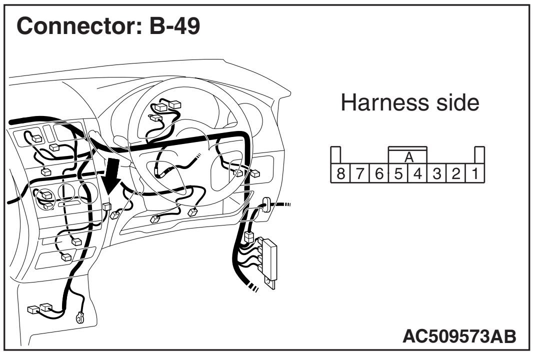
Q: Is the check result normal?

YES : Go to Step 2.

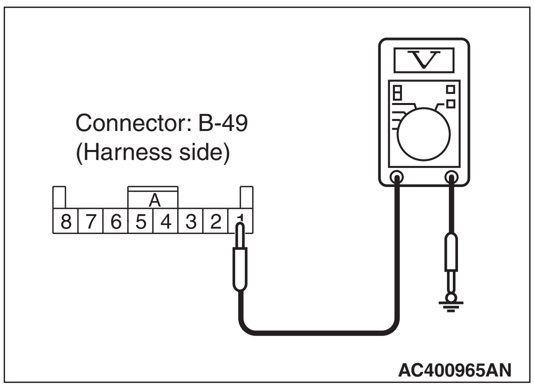
NO : Repair the defective connector.

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Step 2. Voltage measurement at immobiliser-ECU connector B-49 in order to check the battery circuit of power supply system to the key reminder switch.



(1) Disconnect the immobiliser-ECU connector B-49 and measure the voltage at immobiliser-ECU connector B-49 harness side.
(2) Turn the ignition switch to “ON” position.



(3) Measure the voltage between terminal 1 and earth.

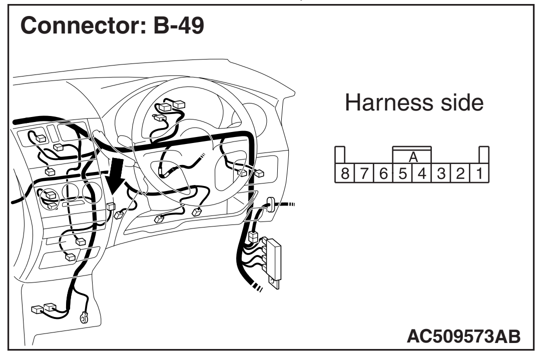
OK: System voltage

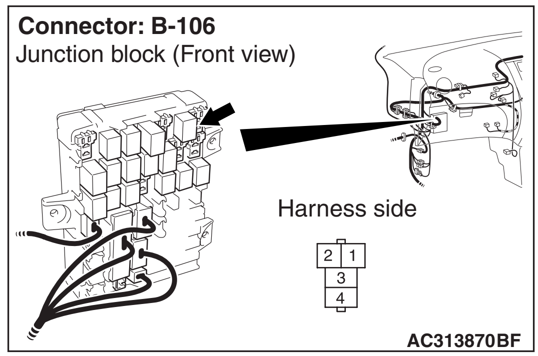
Q: Is the check result normal?
YES : Go to Step 5.
NO : Go to Step 3.

Step 3. Connector check: Engine control relay connector B-106

Q: Is the check result normal?
YES : Go to Step 4.
NO : Repair the defective connector.

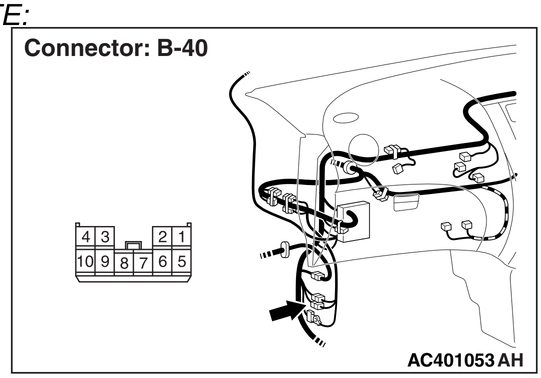
Step 4. Check the wiring harness between engine control relay connector B-106 (terminal 4) and immobiliser-ECU connector B-49 (terminal 1).





Check the power supply line for open circuit.

NOTE:

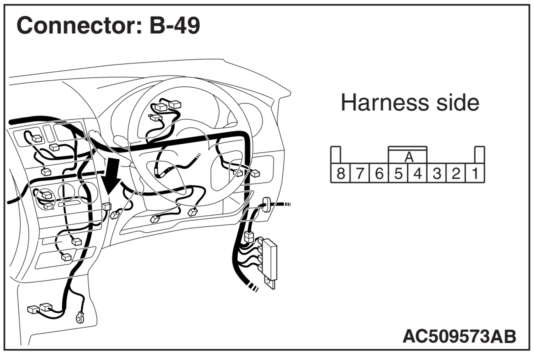


Prior to the wiring harness inspection, check junction block connector B-131, and repair if necessary.

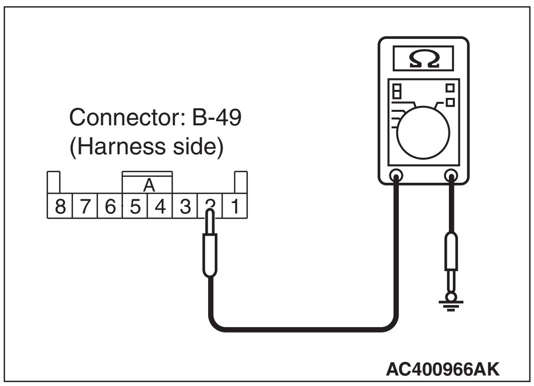
Q: Are the wiring harness between engine control relay connector B-106 (terminal 4) and immobiliser-ECU connector B-49 (terminal 1) in good condition?
YES : Go to Step 5.
NO : Repair the wiring harness.

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Step 5. Resistance measurement at immobiliser-ECU connector B-49 to check the earth circuit to the immobiliser-ECU connector.



(1) Disconnect the immobiliser-ECU connector B-49 and measure the resistance at immobiliser-ECU connector B-49 harness side.

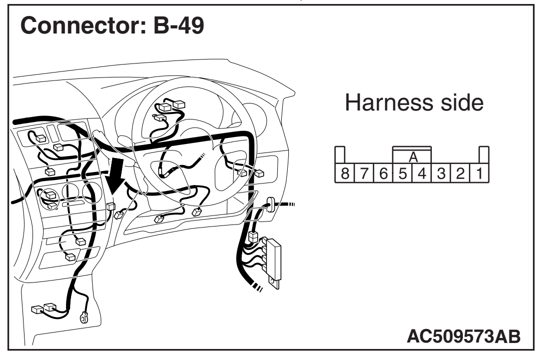


(2) Measure the resistance between terminal 2 and earth.

OK: Continuity exists (2 Ω or less)

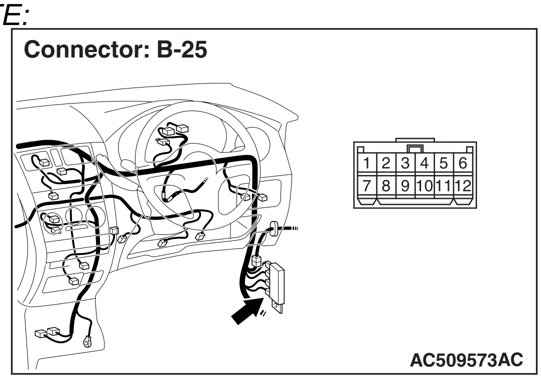
Q: Is the check result normal?
YES : The procedure is complete.
NO : Go to Step 6.

Step 6. Check the wiring harness between immobiliser-ECU connector B-49 (terminal 2) and earth.



Check the earth wires for open circuit.

NOTE:



Prior to the wiring harness inspection, check joint connector B-25, and repair if necessary.

Q: Are the wiring harness between immobiliser-ECU connector B-49 (terminal 2) and earth in good condition?
YES : The procedure is complete.
NO : Repair the wiring harness.

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DATA LIST REFERENCE TABLE

M1543007300541

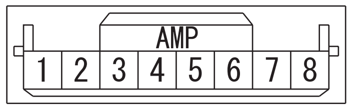
Item No.	Inspection item	Inspection requirement	Normal condition
01	Key has been registered	–	Number of registered ignition keys

CHECK IMMOBILISER-ECU

M1543007601244

TERMINAL VOLTAGE CHECK TABLE

B-49 Immobilizer-ECU connector



AC601477AB

Terminal No.	Signal	Inspection condition	Terminal voltage
1	Immobiliser-ECU power supply	Ignition switch: "LOCK" (OFF)	0V
		Ignition switch: "ON"	System voltage
2	Immobiliser-ECU earth	Always	0V
3	Engine-ECU <M/T> or Engine-CVT-ECU <CVT>	–	–
7	Ignition key ring antenna	–	–
8	Ignition key ring antenna	–	–

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ON-VEHICLE SERVICE

HOW TO REGISTER ENCRYPTED CODE

M1543008100959

⚠ CAUTION

Because registering the encrypted codes is done after all previously-registered codes have been erased, you should keep all of the ignition keys that have already been registered accessible.

If the ignition key, immobiliser-ECU, engine-ECU <M/T> or engine-CVT-ECU <CVT> is replaced or an ignition key is added, encrypted codes of all the ignition keys must be registered. (A maximum of eight different ignition key can be registered). Moreover, when the immobiliser-ECU has been replaced, you need to register the password (secret key code) and an encrypted code into the immobilizer-ECU by using the M.U.T.-III. The vehicle's password input is required for registration with the M.U.T.-III, and the vehicle's password can be changed by the owner using the M.U.T.-III. If an attempt is made to start the engine with an unregistered ignition key, cranking occurs, but fuel supply is cut off to disable the engine. In approximately.

NOTE: Engine-ECU <M/T> or engine-CVT-ECU <CVT> has an encrypted code for immobilizer-ECU, and the encrypted code is registered in the immobilizer-ECU and ignition key.

POINTS TO NOTE DURING OPERATION

If none of the functions can be used, check the diagnosis codes, and after carrying out any necessary repairs, repeat the operation. If an incorrect vehicle's password is input five times in a row, the immobiliser-ECU judges that an unauthorized operation is being attempted. Start-prevention mode will be set, and engine operation will stop and all special functions will be disabled. If the ignition switch is turned to "ON" position, "Unauthorized operation, start- prevention mode" will be cancelled.

KEY ID (ENCRYPTED CODE) REGISTRATION <M.U.T.-III>

All ignition keys can be registered with M.U.T.-III. When you add the ignition key, you should prepare the additional key and all of the ignition keys that have already been registered.

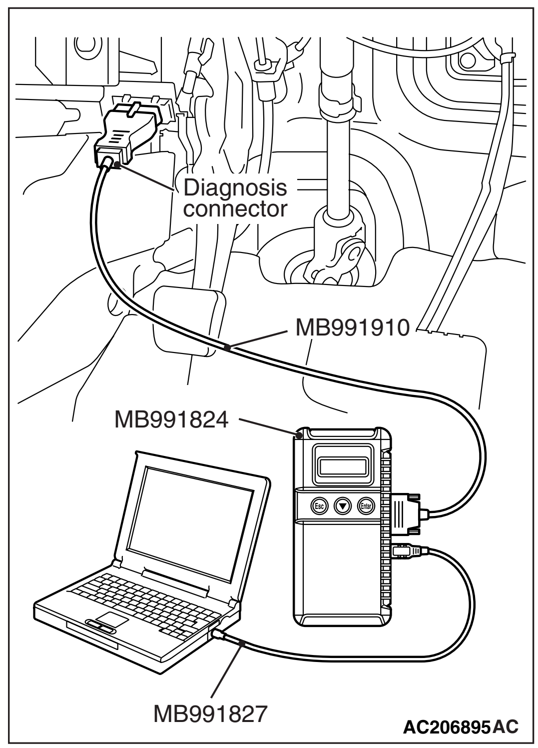
REGISTRATION WITH THE M.U.T.-III

⚠ CAUTION

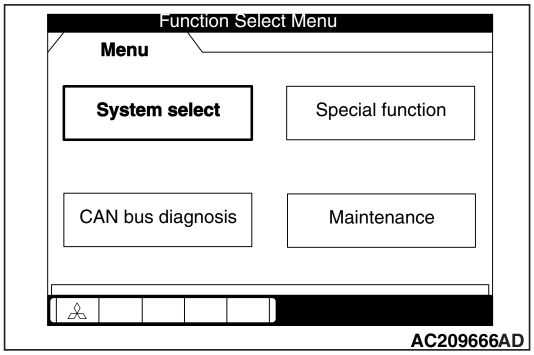
To prevent damage to M.U.T.-III, always turn the ignition switch to "LOCK" (OFF) position before connecting or disconnecting M.U.T.-III.

NOTE:

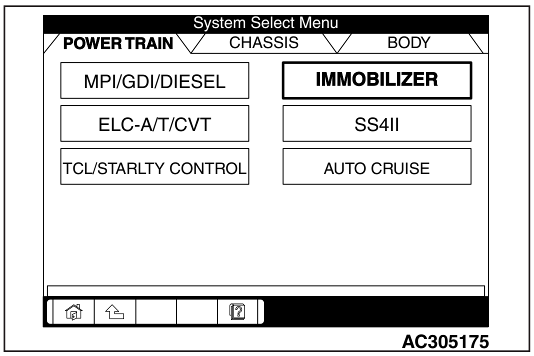
- *Before registration, check that no diagnosis code is set. If a diagnosis code is set, resolve the problem beforehand.*
- *Using the key ID register function will cause all key IDs that have been previously registered in the immobiliser-ECU to be erased. All keys need to be registered. Those which have been registered before should be on hand before using this function.*
- *If registering more than one key, do not disconnect M.U.T.-III halfway through the registration process.*
- *After registering key IDs, check that the engine can be started using all of the keys that have been registered. If the engine will not start, refer to Immobiliser System Troubleshooting P.54A-7.*



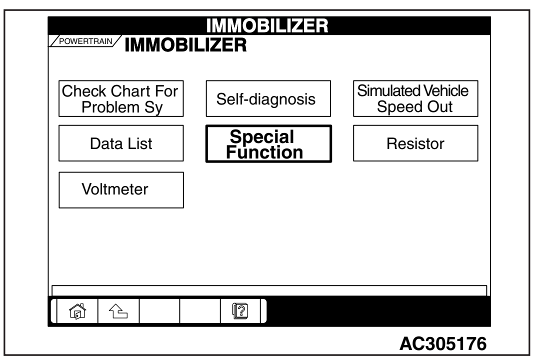
1. Connect the M.U.T.-III to the diagnosis connector (16-pin).
2. Turn the ignition switch to "ON" position.



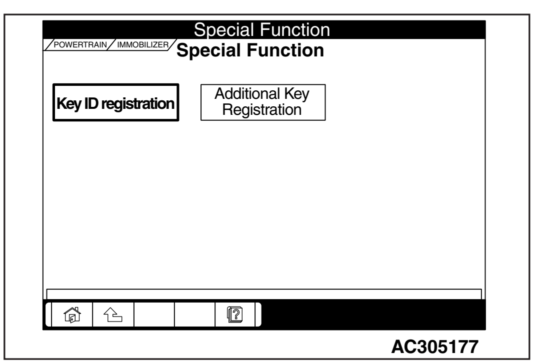
3. Select "System select" from the start-up screen.



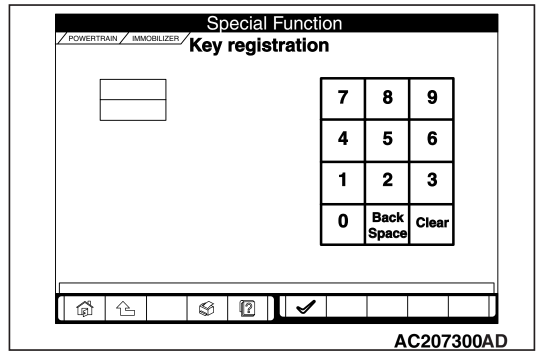
4. Choose "IMMOBILISER" from the "POWER TRAIN" tab.



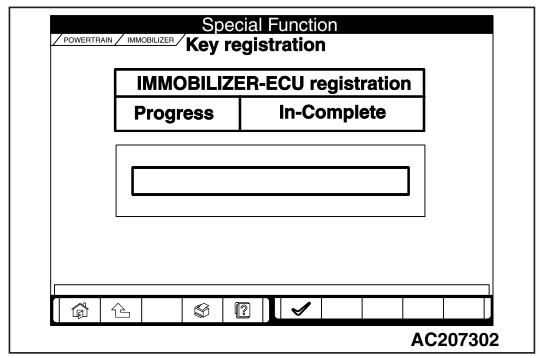
5. Choose "Special Function" from "IMMOBILISER" screen.



6. Choose "Key registration" from "Special Function" screen.



7. Enter the vehicle's password on the "Key registration" screen, and then click the check mark icon. Follow the prompts on the screen to insert key(s) into the ignition switch to begin key registration.



8. If the key ID was registered successfully, "Progress" indication will turn active (grey). Then the registration process completes. If the key ID failed to be registered, "In-Complete" indication will turn active (grey).
9. The number of keys currently registered will be displayed. To register an additional key, replace the ignition key with the next key to be registered within seven seconds. Key ID registration screen will be displayed, then register another key.

   NOTE: A maximum of eight different keys can be registered.

10. This completes the registration operation. Turn the ignition switch "LOCK" (OFF) and leave it off for approximately ten seconds.
11. Check that the engine can be started with each of the ignition keys.
12. Check that the immobiliser system diagnosis code and MPI system diagnosis code did not set.
13. If not diagnosis code is shown, terminate the M.U.T.-III.
14. Turn the ignition switch to "LOCK" (OFF) position.
15. Disconnect M.U.T.-III.

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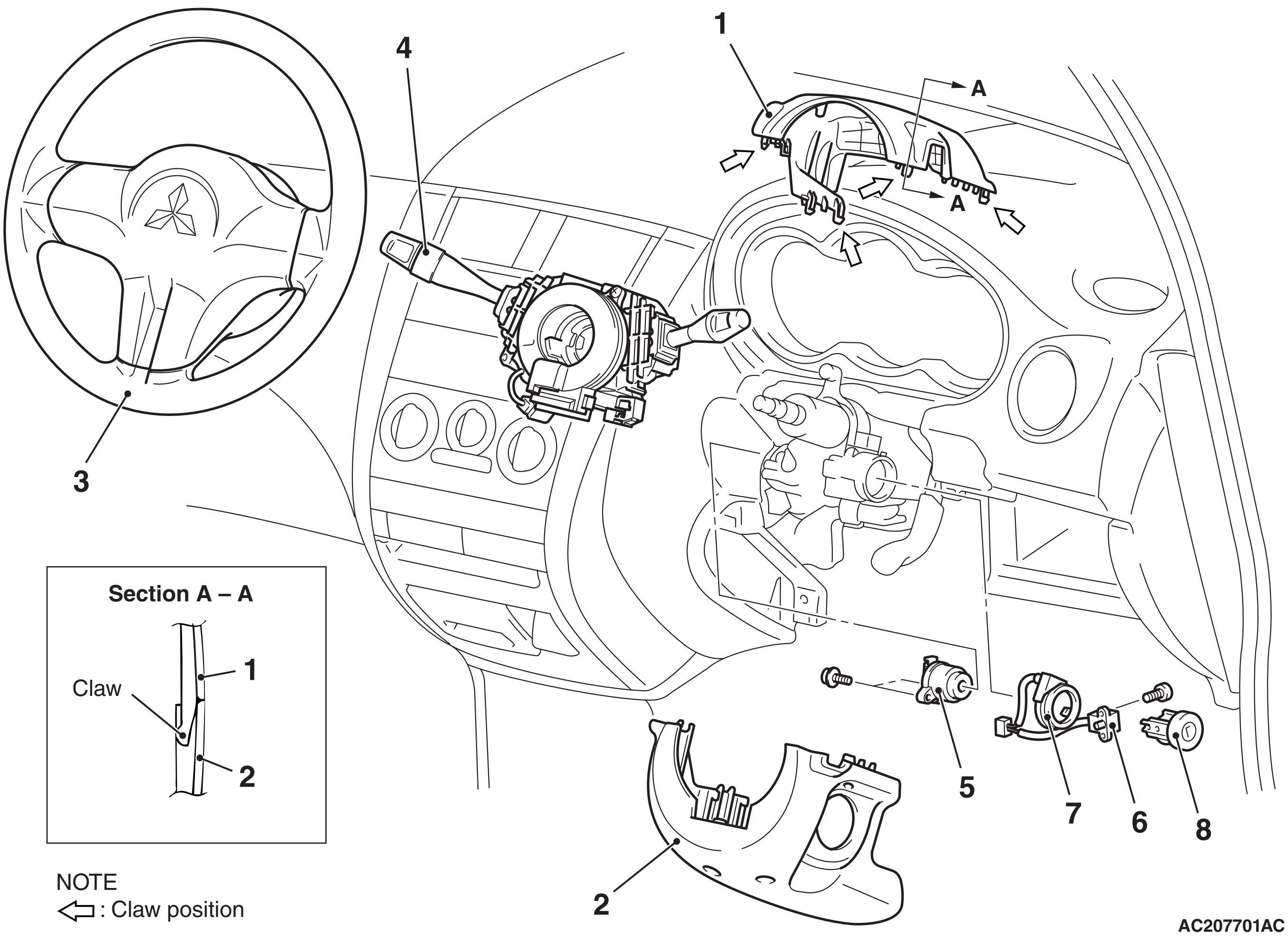
IGNITION SWITCH

REMOVAL AND INSTALLATION

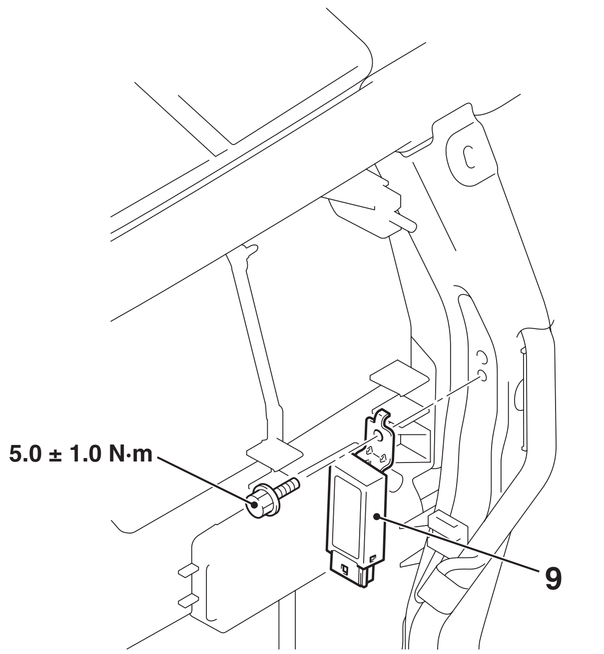
M1543002101222

⚠ WARNING

- ***Before removal of the air bag module, refer to GROUP 52B, Service Precautions (P.52B-5) and Driver's, Front Passenger's Air Bag Module(s) and Clock Spring (P.52B-145).***
- ***When removing and installing the steering wheel, do not let it bump against the air bag module.***



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Ignition switch removal steps

- Lower panel (Refer to GROUP 52A, Instrument panel assembly P.52A-3.)
1. Steering column upper cover
2. Steering column lower cover
3. Steering wheel (Refer to GROUP 37, Steering wheel P.37-90.)
4. Column switch
- Selector lever assembly <Vehicles for smart shift> (Refer to GROUP 23A, Transmission control P.23A-146.)
5. Ignition switch

Ignition switch removal steps

6. Key reminder switch
7. Key ring
8. <<A>> Steering lock cylinder

Immobiliser-ECU removal steps

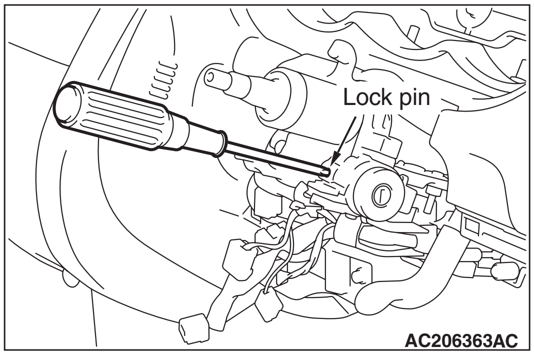
- Upper centre panel, Lower centre panel, Parcel box bracket, Heater control panel, Centre console (Refer to GROUP 52A, Instrument panel assembly P.52A-3.)
9. Immobiliser-ECU

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REMOVAL SERVICE POINT

<<A>> STEERING LOCK CYLINDER REMOVAL

1. Insert the key in the steering lock cylinder and turn it to the "ACC" position.

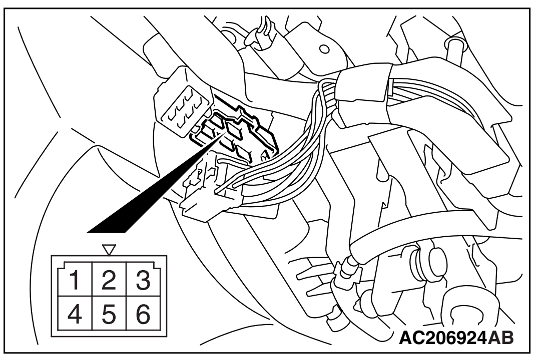


2. Using a small Phillips head screwdriver, pull the steering lock cylinder toward you.

INSPECTION

M1543019504588

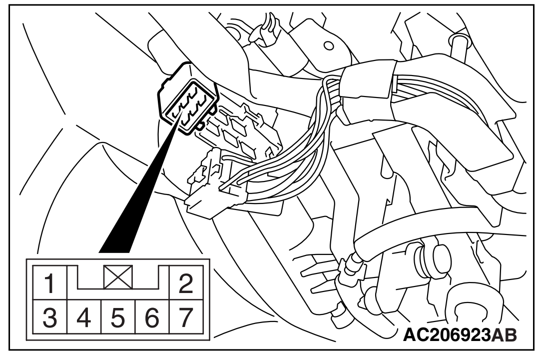
IGNITION SWITCH CONTINUITY CHECK



Disconnect ignition switch connector without removing the ignition switch. Then check the continuity.

Switch position	Tester connection	Specified condition
"LOCK" (OFF)	1 – 2, 1 – 4, 1 – 5, 1 – 6	Open circuit
"ACC"	1 -6	Continuity exists (2 Ω or less)
"ON"	1 – 2, 1 – 4, 1 – 6, 2 – 4, 2 – 6, 4 – 6	Continuity exists (2 Ω or less)
"START"	1 – 2, 1 – 5, 2 – 5	Continuity exists (2 Ω or less)

KEY REMINDER SWITCH CONTINUITY CHECK



Disconnect key reminder switch connector without removing the ignition switch and key reminder switch. Then check the continuity.

Status of ignition key	Tester connection	Specified condition
Removed	4 – 6	Continuity exists (2 Ω or less)
Inserted	4 – 6	Open circuit

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COMBINATION METER

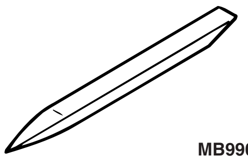
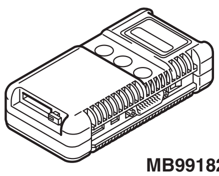
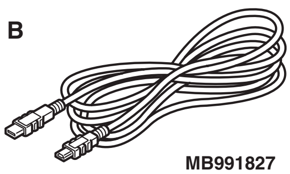
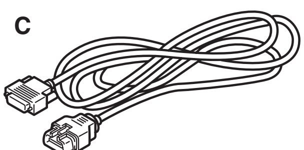
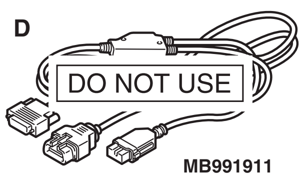
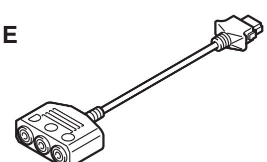
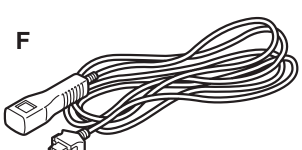
SERVICE SPECIFICATIONS

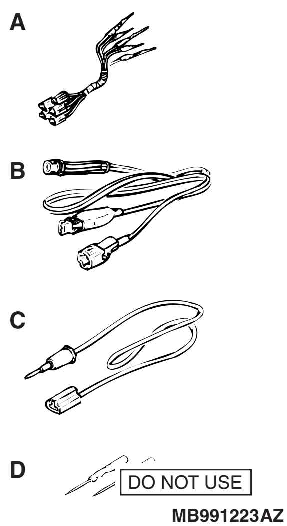
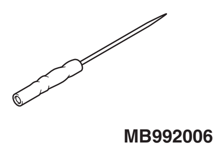
M1543000300937

Item		Standard value	Limit
Speedometer indicating tolerance km/h	20	20 - 24	–
	40	40 - 44	–
	80	80.5 - 85.5	–
	120	121.5 - 127.5	–
	160	162.5 - 169.5	–
	200	203.5 - 211.5	–
The speedometer needle fluctuation km/h (Vehicle speed is 35 km/h or more)		–	± 3
Tachometer indicating tolerance r/min	700	700 ± 70	
	(2,000)	(2,000 ± 80)	
	3,000	3,000 ± 120	
	(4,000)	(4,000 ± 120)	
	5,000	5,000 ± 120	–
	6,000	6,000 ± 120	–
Fuel gauge unit resistance Ω	Stopper position "F"	13.0 ± 1	–
	Stopper position "E"	120.0 ± 1	–
Fuel gauge unit float height mm	Stopper position "F" (highest A)	57.7	–
	Stopper position "E" (lowest B)	215	–

SPECIAL TOOLS

M1543000603261

Tool	Number	Name	Use
 MB990784	MB990784	Ornament remover	combination meter bezel removal
A  MB991824 B  MB991827 C  MB991910 D  MB991911 E  MB991825 F  MB991826 MB991955	MB991955 A: MB991824 B: MB991827 C: MB991910 D: MB991911 E: MB991825 F: MB991826	M.U.T.-III sub-assembly A: Vehicle communication interface (V.C.I.) B: M.U.T.-III USB cable C: M.U.T.-III main harness A (Vehicles with CAN communication system) D: M.U.T.-III main harness B (Vehicles without CAN communication system) E: M.U.T.-III measurement adapter F: M.U.T.-III trigger harness	Check for CAN bus line ⚠ CAUTION **For vehicles with CAN communication, use M.U.T.-III main harness A to send simulated vehicle speed. If you connect M.U.T.-III main harness B instead, the CAN communication does not function correctly.**

Tool	Number	Name	Use
	MB991223 A: MB991219 B: MB991220 C: MB991221 D: MB991222	Harness set A: Test harness B: LED harness C: LED harness adapter D: Probe	Making voltage and resistance measurements during troubleshooting A: Connect pin contact pressure inspection B: Power circuit inspection C: Power circuit inspection D: Commercial tester connection
	MB992006	Extra fine probe	Continuity check and voltage measurement at harness wire or connector

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TROUBLESHOOTING

DIAGNOSIS FUNCTION

M1543007000755

HOW TO READ DIAGNOSIS CODE

Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points P.00-7.

HOW TO ERASE DIAGNOSIS CODE

Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points P.00-7.

DIAGNOSIS CODE CHART

M1543007101261

⚠ CAUTION

During diagnosis, a diagnosis code associated with other system may be set when the ignition switch is turned on with connector(s) disconnected. On completion, confirm all systems for diagnosis code(s). If diagnosis code(s) are set, erase them all.

Diagnosis code No.	Diagnosis item	Reference page
U1073	Bus Off	P.54A-32
U1100	Engine-ECU <M/T> or engine-CVT-ECU <CVT> time-out (related to engine)	P.54A-33
U1101	Engine-CVT-ECU (related to CVT) <CVT>	
U1102	ABS-ECU or ASC-ECU time-out	P.54A-35
U1106	EPS-ECU time-out	P.54A-36
U1109	ETACS-ECU time-out	P.54A-38
U1112	SRS-ECU time-out	P.54A-39
U1120	Failure information on engine-ECU <M/T> or engine-CVT-ECU <CVT> (related to engine)	P.54A-40
U1206	Flag invalid	P.54A-41
B1001	Interior temperature sensor system (short circuit)	Refer to GROUP 55A, Check chart for diagnosis codes P.55A-5. Refer to GROUP 55B, Check chart for diagnosis codes P.55B-3.
B1002	Interior temperature sensor system (open circuit)	
B1011	Ambient temperature sensor system (short circuit)	
B1012	Ambient temperature sensor system (open circuit)	
B1021	Air thermo sensor system (short circuit)	
B1022	Air thermo sensor system (open circuit)	
B1041	Potentiometer system for the air mix damper (short to power supply)	
B1042	Potentiometer system for the air mix damper (short to earth or open circuit)	
B1045	Motor drive system for the air mix damper	
B1081	Communication error with control parts	
B1082	Automatic/manual types abnormal error	

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DIAGNOSTIC TROUBLE CODE PROCEDURES

Code No.U1073 Bus Off

⚠ CAUTION

If diagnosis code U1073 is set in the combination meter, always diagnose the CAN bus lines.

⚠ CAUTION

Whenever the ECU is replaced, ensure that the communication circuit is normal.

TROUBLE JUDGMENT

If the combination meter ceases communicating once (i.e. bus off) and then returns to it, the combination meter will not communicate for three minutes immediately after that point. This three-minute period is called "Penalty mode." Immediately after the combination meter returns to communication, the diagnosis code is set.

COMMENTS ON TROUBLE SYMPTOM

The wiring harness wire or connectors may have loose, corroded, or damage terminals, or terminals pushed back in the connector, or the combination meter may be defective.

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of combination meter

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics

Use the M.U.T.-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines. (Refer to GROUP 54D, Diagnosis – Can Bus Diagnostics Table P.54D-13). Repair the CAN bus line and go to Step 3.

STEP 2. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Erase the diagnosis code.
(2) Turn the ignition switch to "ON" position.
(3) Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : If the trouble is solved, it is determined that there is an intermittent malfunction such as poor engaged connector(s) or open circuit (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-13).

NO : Replace combination meter and then go to Step 3.

STEP 3. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Erase the diagnosis code.
(2) Turn the ignition switch to "ON" position.
(3) Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to Step 1.

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Code No.U1100: Engine-ECU <M/T> or Engine-CVT-ECU <CVT> Time-out (Related to Engine)
Code No.U1101: Engine-CVT-ECU Time-out <CVT> (Related to Automatic Transmission)

⚠ CAUTION

If diagnosis code No.U1100 or U1101 is set in the meter, diagnose the CAN bus lines.

⚠ CAUTION

Whenever the ECU is replaced, ensure that the communication circuit is normal.

TROUBLE JUDGMENT

U1100

- The combination meter receives engine control system-related signals from the engine-ECU <M/T> or engine-CVT-ECU <CVT> via CAN bus lines. If the display unit can not receives the necessary signals, diagnosis code U1100 will be set.

U1101

- The combination meter receives transmission control system-related signal from the engine-CVT-ECU <CVT> via CAN bus lines. If the display unit can not receive the necessary signals, diagnosis code U1101 will be set.

COMMENTS ON TROUBLE SYMPTOM

The M.U.T.-III shows a diagnosis code status as active.

- Connector(s) or wiring harness in the CAN bus lines between the engine-ECU <M/T> or engine-CVT-ECU <CVT> and the combination meter, the power supply system to the engine-ECU <M/T> or engine-CVT-ECU <CVT>, the engine-ECU <M/T> or engine-CVT-ECU <CVT> itself, or the combination meter may be defective.

The M.U.T.-III shows a diagnosis code status as stored.

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness in the CAN bus lines between the engine-ECU <M/T> or engine-CVT-ECU <CVT> and the combination meter, and the power supply system to the engine-ECU <M/T> or engine-CVT-ECU <CVT>. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points P.00-13).

NOTE: For a past trouble, you may not find it by the M.U.T.-III CAN bus diagnostics even if there is any failure in CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-13). and check the CAN bus lines. You can narrow down the possible cause of the trouble by referring to the diagnosis code, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54D, Diagnosis - Can Bus Diagnostic Table P.54D-13).

⚠ CAUTION

If the ignition switch is turned on without starting the engine and then one minutes passes, the combination meter may store U1100, U1101, U1102, U1106 and U1112 as past trouble.

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of engine-ECU <M/T> or engine-CVT-ECU <CVT>
- Malfunction of combination meter

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics

Use the M.U.T.-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to 54D, Diagnosis - Can Bus Diagnostics Table P.54D-13). Repair the CAN bus line and go to Step 6.

STEP 2. M.U.T.-III other system diagnosis code

Check whether the MPI system-related diagnosis code is set.

Q: Is the diagnosis code set?

YES : Diagnose the MPI system. Refer to GROUP 13A <4A9>, Troubleshooting P.13A-20, or GROUP 13B <4G1>, Troubleshooting P.13B-18.

NO : Go to Step 3.

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STEP 3. M.U.T.-III other system diagnosis code

Check if a diagnosis code, which relates to CAN communication-linked systems below, is set.

EPS

- Code No.U1100: engine-ECU <M/T> or engine-CVT-ECU <CVT> time-out diagnosis code

ETACS

- Code No.U1101: engine-CVT-ECU <CVT> time-out diagnosis code

Q: Is the diagnosis code set?

YES : Go to Step 4.
NO : Go to Step 5.

STEP 4. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.
(1) Erase the diagnosis code.
(2) Turn the ignition switch to "ON" position.
(3) Check if the diagnosis code is set.

Q: Is the diagnosis code set?

YES : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the engine-ECU <M/T> or engine-CVT-ECU <CVT> and the combination meter (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-13)
NO : After the engine-ECU <M/T> or engine-CVT-ECU <CVT> is replaced. Then go to step 6.

STEP 5. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.
(1) Erase the diagnosis code.
(2) Ignition switch: LOCK (OFF) → ON
(3) Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the engine-ECU <M/T> or engine-CVT-ECU <CVT> and the combination meter (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-13)
NO : After the combination meter is replaced. Then go to step 6.

STEP 6. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.
(1) Erase the diagnosis code.
(2) Ignition switch: LOCK (OFF) → ON
(3) Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : The procedure is complete.
NO : Return to Step 1.

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Code No.U1102: ABS-ECU or ASC-ECU Time-out

⚠ CAUTION
If diagnosis code U1102 is set in the combination meter, always diagnose the CAN bus lines.

⚠ CAUTION
Whenever the ECU is replaced, ensure that the communication circuit is normal

TROUBLE JUDGMENT

The combination meter communicates with the ABS-ECU or ASC-ECU through CAN bus lines. If it can not receive all the necessary signals from the ABS-ECU or ASC-ECU, diagnosis code U1102 is set.

COMMENTS ON TROUBLE SYMPTOM

The M.U.T.-III shows a diagnosis code status as active.

- Connector(s) or wiring harness in the CAN bus lines between the ABS-ECU or ASC-ECU and the combination meter, the power supply system to the ABS-ECU or ASC-ECU, the ABS-ECU or ASC-ECU itself, or the combination meter may be defective.

The M.U.T.-III shows a diagnosis code status as stored.

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness in the CAN bus lines between the ABS-ECU or ASC-ECU and the combination meter, and the power supply system to the ABS-ECU or ASC-ECU. For diagnosis procedures, refer to "How to treat past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points P.00-13).

NOTE: For a past trouble, you can not find it by the M.U.T.-III CAN bus diagnostics even if there is any failure in CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points-How to Cope with Intermittent Malfunction P.00-13 and check the CAN bus lines. You can narrow down the possible cause of the trouble by referring to the diagnosis code, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54D, Diagnosis - Can Bus Diagnostics Table P.54D-13).

⚠ CAUTION
If the ignition switch is turned on without starting the engine and then one minutes passes, the combination meter may store U1100, U1101, U1102, U1106 and U1112 as past trouble.

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of the ABS-ECU or ASC-ECU
- Malfunction of the combination meter

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics

Use the M.U.T.-III to diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus line (Refer to GROUP 54D, Diagnosis - Can Bus Diagnostics Table P.54D-13). Repair the CAN bus line and go to Step 6.

STEP 2. M.U.T.-III other system diagnosis code

Check that the ABS-ECU or ASC-ECU sets a diagnosis code.

Q: Is the diagnosis code set?

YES : Diagnose the ABS or ASC-ECU system (Refer to GROUP 35B, Troubleshooting P.35B-7<ABS> or Refer to GROUP 35C, Troubleshooting P.35C-6<ASC>).

NO : Go to Step 3.

STEP 3. M.U.T.-III other system diagnosis code

Check if a diagnosis code, which relates to CAN communication-linked systems below, is set.

Engine

- U1102: ABS or ASC time-out diagnosis code

EPS

- U1102: ABS or ASC time-out diagnosis code

Q: Is the diagnosis code set?

YES : Go to Step 4.

NO : Go to Step 5.

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STEP 4. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Erase the diagnosis code.
(2) Ignition switch: LOCK (OFF) → ON
(3) Check if the diagnosis code is set.

Q: Is the check result normal?

YES : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the ABS-ECU or ASC-ECU and the combination meter (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-13)

NO : After the ABS-ECU or ASC-ECU is replaced, then go to Step 6.

STEP 5. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Erase the diagnosis code.
(2) Ignition switch: LOCK (OFF) → ON
(3) Check if the diagnosis code is set.

Q: Is the check result normal?

YES : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the ABS-ECU or ASC-ECU and the combination meter (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-13).

NO : After the combination meter is replaced, then go to Step 6.

STEP 6. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Erase the diagnosis code.
(2) Ignition switch: LOCK (OFF) → ON
(3) Check if the diagnosis code is set.

Q: Is the check result normal?

YES : The procedure is complete.

NO : Return to Step 1.

Code No.U1106 EPS-ECU Time-out

⚠ CAUTION

If diagnosis code No.U1106 is set in the meter-ECU, diagnose the CAN bus lines.

⚠ CAUTION

Whenever the ECU is replaced, ensure that the communication circuit is normal.

TROUBLE JUDGMENT

The combination meter receives signals from the electric power steering-ECU through the CAN bus lines. If it cannot receive any signals from the electric power steering-ECU, diagnosis code U1106 will be set.

COMMENTS ON TROUBLE SYMPTOM

The M.U.T.-III shows a diagnosis code status as active.

- Connector(s) or wiring harness in the CAN bus lines between the electric power steering-ECU and the combination meter, the power supply system to the electric power steering-ECU, the combination meter itself may be defective.

The M.U.T.-III shows a diagnosis code status as stored.

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness in the CAN bus lines between the electric power steering-ECU and the combination meter, and the power supply system to the electric power steering-ECU. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points P.00-13).

NOTE: For a past trouble, you may not find it by the M.U.T.-III CAN bus diagnostics even if there is any failure in CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-13) and check the CAN bus lines. You can narrow down the possible cause of the trouble by referring to the diagnosis code, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54D, Explanation about the M.U.T.-III CAN Bus Diagnostics P.54D-7).

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⚠ CAUTION

If the ignition switch is turned to the ON position without starting the engine, the diagnosis code may be set after one minutes. Now codes U1100, U1101, U1102, U1106 and U1112 will be stored as past troubles in the combination meter.

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of the electric power steering-ECU
- Malfunction of the combination meter

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics

Use the M.U.T.-III to diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54D, Diagnosis - Can Bus Diagnostics Table P.54D-13). Then go to Step 6.

STEP 2. M.U.T.-III other system diagnosis code

Check that an electric power steering-ECU is stored.

Q: Is the diagnosis code set?

YES : Diagnose the electric power steering (Refer to GROUP 37, Troubleshooting P.37-9).

NO : Go to Step 3.

STEP 3. M.U.T.-III other system diagnosis code

Check if a diagnosis code, which relates to CAN communication-linked systems below, is set.

Engine

- U1106: Electric power steering time-out diagnosis code

Q: Is the diagnosis code set?

YES : Go to Step 4.

NO : Go to Step 5.

STEP 4. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Erase the diagnosis code.

(2) Ignition switch: LOCK (OFF) → ON

(3) Check if the diagnosis code is set.

Q: Is the check result normal?

YES : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the Electric power steering-ECU and the combination meter (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-13).

NO : Replace the electric power steering-ECU, and then go to Step 6.

STEP 5. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Erase the diagnosis code.

(2) Ignition switch: LOCK (OFF) → ON

(3) Check if the diagnosis code is set.

Q: Is the check result normal?

YES : A poor connection, open circuit or other intermittent malfunction is present in the CAN bus lines between the Electric power steering-ECU and the combination meter (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-13).

NO : After the combination meter is replaced, and then go to Step 6.

STEP 6. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Erase the diagnosis code.

(2) Ignition switch: LOCK (OFF) → ON

(3) Check if the diagnosis code is set.

Q: Is the check result normal?

YES : The procedure is complete.

NO : Return to Step 1.

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Code No.U1109: ETACS-ECU Time-out

⚠ CAUTION

If diagnosis code U1109 is set in the combination meter, diagnose the CAN main bus line.

⚠ CAUTION

Whenever the ECU is replaced, ensure that the communication circuit is normal.

TROUBLE JUDGMENT

The combination meter receives signal from the ETACS-ECU via CAN bus lines. If it can not receive all the necessary signals from the ETACS-ECU, diagnosis code U1109 is set.

COMMENTS ON TROUBLE SYMPTOM

The M.U.T.-III shows a diagnosis code status as active.

- Connector(s) or wiring harness in the CAN bus lines between the ETACS-ECU and the combination meter, the power supply system to the ETACS-ECU, the ETACS-ECU itself, or the combination meter may be defective.

The M.U.T.-III shows a diagnosis code status as stored.

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness in the CAN bus lines between the ETACS-ECU and the combination meter, and the power supply system to the ETACS-ECU. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points P.00-13).

NOTE: For a past trouble, you may not find it by the M.U.T.-III CAN bus diagnostics even if there is any failure in CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-13). and check the CAN bus lines. You can narrow down the possible cause of the trouble by referring to the diagnosis code, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54D, Explanation about the M.U.T.-III CAN Bus Diagnostics P.54D-7).

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of ETACS-ECU
- Malfunction of combination meter

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics

Use the M.U.T.-III to diagnose the CAN bus lines.

Q: Is the check result normal?

YES : Go to Step 2.

NO : Repair the CAN bus line (Refer to GROUP 54D, Diagnosis - Can Bus Diagnostics Table P.54D-13). Repair the CAN bus line and go to Step 4.

STEP 2. M.U.T.-III other system diagnosis code

Check that the ETACS-ECU sets a diagnosis code.

Q: Is the diagnosis code set?

YES : Diagnose the CAN system (Refer to GROUP 54D, Diagnosis -Can Bus Diagnostics Table P.54D-13).

NO : Go to Step 3.

STEP 3. M.U.T.-III diagnosis code

Check that diagnosis code U1206 is set.

Q: Is the check result satisfactory?

YES : After the ETACS-ECU is replaced, then go to Step 4.

NO : After the combination meter is replaced, then go to Step 4.

STEP 4. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Erase the diagnosis code.

(2) Ignition switch: LOCK (OFF) → ON

(3) Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to Step 1.

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Code No.U1112: SRS-ECU Time-out

⚠ CAUTION

If diagnosis code U1112 is set in the combination meter, always diagnose the CAN bus lines.

⚠ CAUTION

Whenever the ECU is replaced, ensure that the communication circuit is normal.

TROUBLE JUDGMENT

The combination meter communicates with the SRS-ECU through CAN bus lines. If it can not receive all the necessary signals from the SRS-ECU, diagnosis code U1112 is set.

COMMENTS ON TROUBLE SYMPTOM

The M.U.T.-III shows a diagnosis code status as active.

- Connector(s) or wiring harness in the CAN bus lines between the SRS-ECU and the combination meter, the power supply system to the SRS-ECU, the SRS-ECU itself, or the combination meter may be defective.

The M.U.T.-III shows a diagnosis code status as stored.

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness in the CAN bus lines between the SRS-ECU and the combination meter, and the power supply system to the SRS-ECU. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points P.00-13).

NOTE: For a past trouble, you may not find it by the M.U.T.-III CAN bus diagnostics even if there is any failure in CAN bus lines. In this case, refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points - How to Cope with Intermittent Malfunctions P.00-13). and check the CAN bus lines. You can narrow down the possible cause of the trouble by referring to the diagnosis code, which is set regarding the CAN communication-linked ECUs (Refer to GROUP 54D, Explanation about the M.U.T.-III CAN Bus Diagnostics P.54D-7).

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of SRS-ECU
- Malfunction of combination meter

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics

Use the M.U.T.-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.
NO : Repair the CAN bus lines (Refer to GROUP 54D, Diagnosis - Can Bus Diagnostics Table P.54D-13). Repair the CAN bus line and go to Step 4.

STEP 2. M.U.T.-III other system diagnosis code

Check that the SRS-ECU sets a diagnosis code.

Q: Is the diagnosis code set?

YES : Diagnose the SRS. Refer to GROUP 52B, Troubleshooting P.52B-11.
NO : Go to Step 3.

STEP 3. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Erase the diagnosis code.
(2) Ignition switch: LOCK (OFF) → ON
(3) Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : A poor connection, open circuit or other intermittent malfunction is present in the lines between the SRS-ECU and the combination meter (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-13).
NO : Replace SRS-ECU and then go to step 4.

STEP 4. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Erase the diagnosis code.
(2) Ignition switch: LOCK (OFF) → ON
(3) Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : The procedure is complete.
NO : Go to Step 1.

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Code No.U1120 Failure Information on Engine-ECU <M/T> or Engine-CVT-ECU <CVT> (Related to Engine)

⚠ CAUTION

If diagnosis code U1120 is set in the combination meter, diagnose the CAN main bus line.

TROUBLE JUDGMENT

The combination meter communicates with the engine-ECU <M/T> or engine-CVT-ECU <CVT> via CAN bus line. If failure information is sent to the engine-ECU <M/T> or engine-CVT-ECU <CVT>, diagnosis code U1120 will be set.

COMMENTS ON TROUBLE SYMPTOM

The M.U.T.-III shows a diagnosis code status as active.

- The engine-ECU <M/T> or engine-CVT-ECU <CVT>, or the combination meter may be defective.

The M.U.T.-III shows a diagnosis code status as stored.

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness between the engine-ECU <M/T> or engine-CVT-ECU <CVT> and the combination meter. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points P.00-13).

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of engine-ECU <M/T> or engine-CVT-ECU <CVT>
- Malfunction of combination meter

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics

Use the M.U.T.-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.
NO : Repair the CAN bus lines (Refer to GROUP 54D, Diagnosis - Can Bus Diagnostics Table P.54D-13). Repair the CAN bus line and go to Step 6.

STEP 2. M.U.T.-III other system diagnosis code

Check if an engine-ECU <M/T> or engine-CVT-ECU <CVT> related diagnosis code is set.

Q: Is the diagnosis code set?

YES : Diagnose the MPI system. Refer to GROUP 13A <4A9>, Troubleshooting P.13A-20, or GROUP 13B <4G1>, Troubleshooting P.13B-18.
NO : Go to Step 3.

STEP 3. M.U.T.-III other system diagnosis code

Check if a diagnosis code, which relates to CAN communication-linked systems below, is set.

EPS

- Code No.U1120: Failure information on engine-ECU <M/T> or engine-CVT-ECU <CVT> (related to engine)

Q: Is the diagnosis code set?

YES : Go to Step 4.
NO : Go to Step 5.

STEP 4. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Erase the diagnosis code.
(2) Ignition switch: LOCK (OFF) → ON
(3) Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : A poor connection, open circuit or other intermittent malfunction is present in the lines between the engine-ECU <M/T> or engine-CVT-ECU <CVT> and the secondary speed sensor (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-13).
NO : Replace engine-ECU <M/T> or engine-CVT-ECU<CVT>, and then go to Step 6 .

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STEP 5. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Erase the diagnosis code.
(2) Ignition switch: LOCK (OFF) → ON
(3) Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : A poor connection, open circuit or other intermittent malfunction is present in the lines between the engine-ECU <M/T> or engine-CVT-ECU <CVT> and the secondary speed sensor (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points – How to Cope with Intermittent Malfunctions P.00-13).

NO : Replace the combination meter, and then go to Step 6.

STEP 6. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Erase the diagnosis code.
(2) Ignition switch: LOCK (OFF) → ON
(3) Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to Step 1.

Code No.U1206 Flag Invalid

⚠ CAUTION

If diagnosis code U1206 is set in the combination meter, diagnose the CAN main bus line.

TROUBLE JUDGMENT

When the ignition switch is in the LOCK (OFF) position, the combination meter receives door-open signal or communication standby instruction from the ETACS-ECU and keeps CAN communication. If there is a contradiction between these two signals, diagnosis code U1206 will be set.

COMMENTS ON TROUBLE SYMPTOM

The M.U.T.-III shows a diagnosis code status as active.

- The door switch system of the ETACS-ECU, the ETACS-ECU, or the combination meter may be defective.

The M.U.T.-III shows a diagnosis code status as stored.

- Carry out diagnosis with particular emphasis on connector(s) or wiring harness between the ETACS-ECU and the door switch, and the power supply system to the ETACS-ECU. For diagnosis procedures, refer to "How to cope with past trouble" (Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points P.00-13).

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of ETACS-ECU
- Malfunction of combination meter

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics

Use the M.U.T.-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54D, Diagnosis - Can Bus Diagnostics Table P.54D-13). Repair the CAN bus line and go to Step 4.

STEP 2. M.U.T.-III other system diagnosis code

Check that the ETACS-ECU sets a diagnosis code.

Q: Is the diagnosis code set?

YES : Diagnose the CAN system (Refer to GROUP 54B or 54C, Troubleshooting P.54B-18 or P.54C-15).

NO : Go to Step 3.

STEP 3. Replace the ETACS-ECU, and check whether the diagnosis code is reset.

After the ETACS-ECU is replaced, then check that the diagnosis code is reset.

Q: Is the check result satisfactory?

YES : Go to Step 4.

NO : Replace the combination meter, and then go to Step 4.

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STEP 4. Check whether the diagnosis code is reset.

Recheck if the diagnosis code is set.

(1) Erase the diagnosis code.

(2) Ignition switch: LOCK (OFF) → ON

(3) Check if the diagnosis code is set.

Q: Is the check result satisfactory?

YES : . The procedure is complete.

NO : . Go to Step 1.

TROUBLE SYMPTOM CHART

M1543007201484

⚠ CAUTION

During diagnosis, a diagnosis code associated with other system may be set when the ignition switch is turned on with connector(s) disconnected. On completion, confirm all systems for diagnosis code(s). If diagnosis code(s) are set, erase them all.

⚠ CAUTION

When the battery cable is disconnected or the combination meter is removed, the fuel gauge learned value will be erased. To let the display unit re-learn it, enter the vehicle speed (by driving the vehicle or entering simulated vehicle speed) and then stop the vehicle.

Trouble symptom	Inspection procedure number	Reference page
Communication with the M.U.T.-III is not possible.	1	P.54A-43
Power supply circuit system check.	2	P.54A-44
Odometer and trip meter is not displayed.	3	
All the needle meters do not work.	4	
If the ignition switch is turned to the ON position, the indicator and warning lights do not illuminate.	5	
Speedometer does not work (other meters work).	6	P.54A-49
The fuel gauge needle moves excessively.	7	
Tachometer does not work (other meters work).	8	P.54A-51
Fuel Gauge does not work (other meters work).	9	P.54A-53
Engine coolant temperature gauge does not work (other meters work).	10	P.54A-57

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SYMPTOM PROCEDURES

Inspection Procedure 1: Communication with the M.U.T.-III is not Possible.

COMMENTS ON TROUBLE SYMPTOM

If the system does not communicate with the M.U.T.-III, power supply to the diagnosis connector or CAN bus lines may be defective.

POSSIBLE CAUSES

- Damaged harness wires and connectors

DIAGNOSIS PROCEDURE

STEP 1. Check that the engine-ECU <M/T> or engine-CVT-ECU <CVT> communicates with the M.U.T.-III.

Check that the M.U.T.-III communicates with the engine-ECU <M/T> or engine-CVT-ECU <CVT> when the M.U.T.-III is operated..

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Perform MPI system troubleshooting. (Refer to GROUP 13A <4A9>, Troubleshooting P.13A-20, or GROUP 13B <4G1>, Troubleshooting P.13B-18.).

STEP 2. M.U.T.-III CAN bus diagnostics

Use the M.U.T.-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

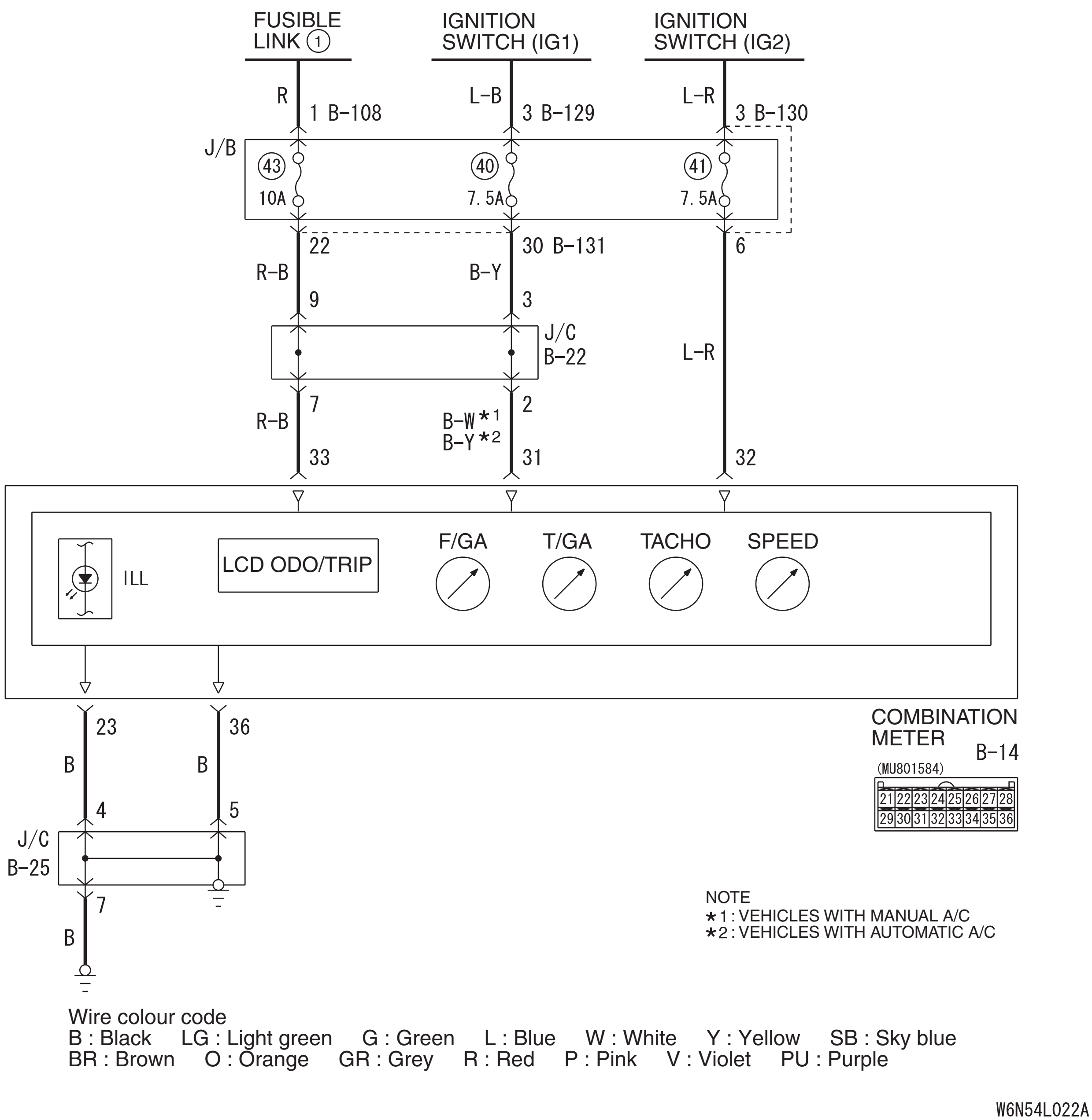
YES : Diagnose the power supply circuit. Refer to P.54A-44.

NO : Repair the CAN bus lines (Refer to GROUP 54D, Diagnosis - Can Bus Diagnostics Table P.54D-13).

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Inspection Procedure 2: Power Supply Circuit System Check
Inspection Procedure 3: Odometer and Trip Meter is not Displayed. <The Clock is not Displayed Either.>
Inspection Procedure 4: All the Needle Meters do not Work.
Inspection Procedure 5: If the Ignition Switch is Turned to the ON Position, the Indicator and Warning Lights do not Illuminate.

Combination Meter Power Supply Circuit



COMMENTS ON TROUBLE SYMPTOM

If the odometer and trip meter is not displayed <The clock is not displayed either.> or all the meter needles doesn't move, power supply to the combination meter, or the combination meter itself may be defective.

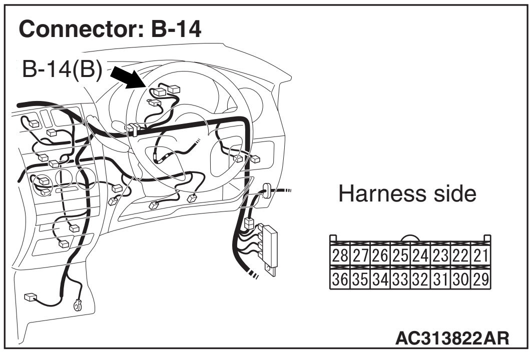
POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of the combination meter

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DIAGNOSIS PROCEDURE

STEP 1. Connector check: Combination meter connector B-14

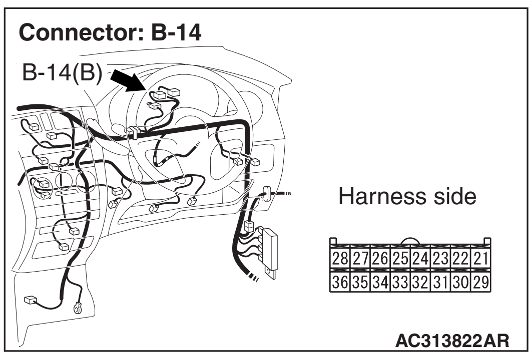


Q: Is the check result normal?

YES : Go to Step 2.

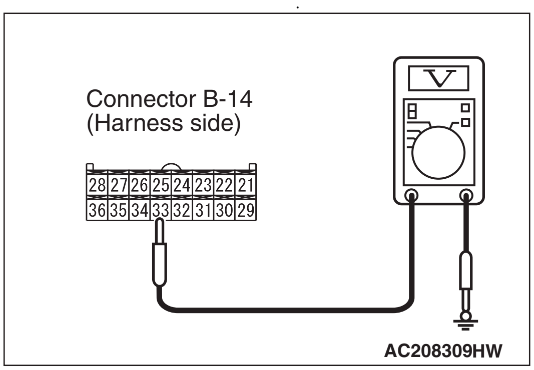
NO : Repair the defective connector.

STEP 2. Voltage measurement at combination meter connector B-14.



Disconnect the connector, and measure at the wiring harness side.

- Ignition switch: LOCK (OFF) position



Voltage between combination meter connector B-14 terminal No.33 and body earth

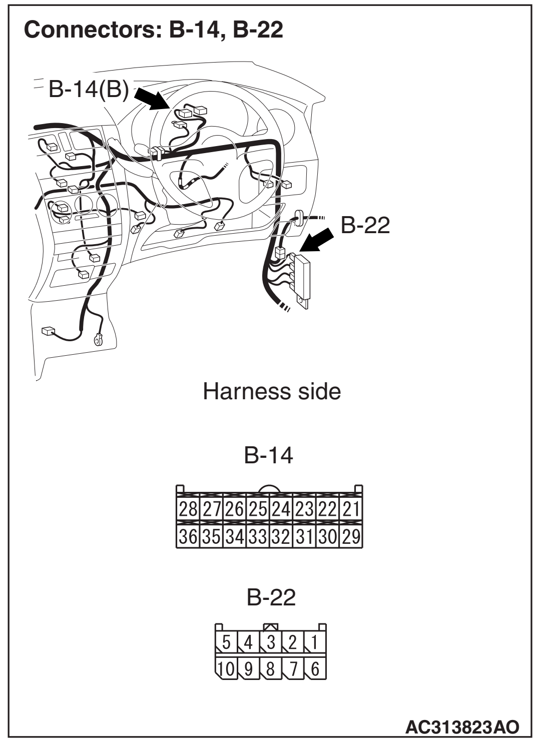
OK: System voltage

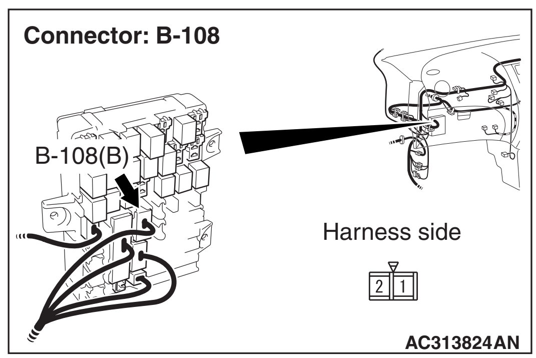
Q: Is the check result normal?

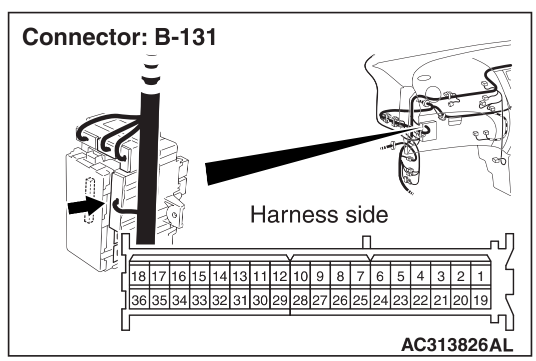
YES : Go to Step 4.

NO : Go to Step 3.

STEP 3. Check the harness wire between the battery (fusible link No.1) and combination meter connector B-14 terminal No.33.







NOTE: Prior to the wiring harness inspection, check joint connector B-22 and junction block connectors B-108 and B-131, and repair if necessary.

Q: Is the wiring harness between the battery (fusible link No.1) and combination meter connector B-14 terminal No.33 in good condition?

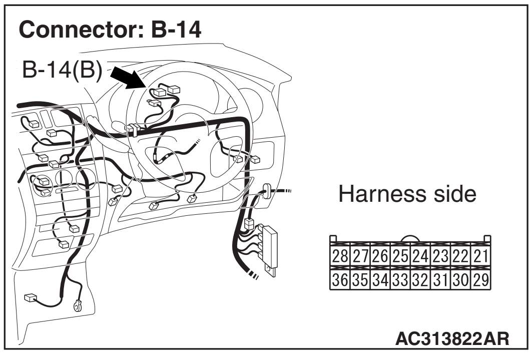
YES : Retest the system.

NO : Repair the wiring harness.

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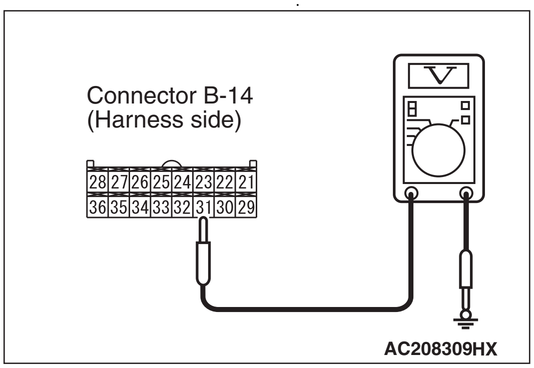
Group TOC

STEP 4. Voltage measurement at combination meter connector B-14.



Disconnect the connector, and measure at the wiring harness side.

- Ignition switch: ON



Voltage between combination meter connector B-14 terminal No.31 and body earth

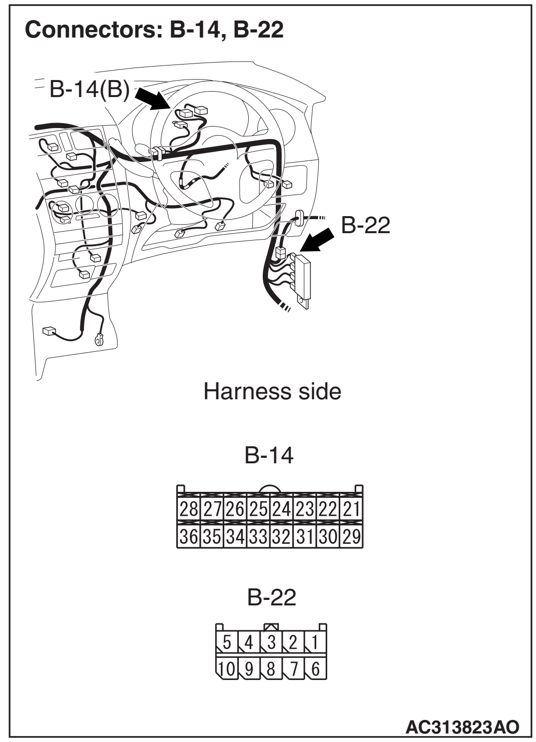
OK: System voltage

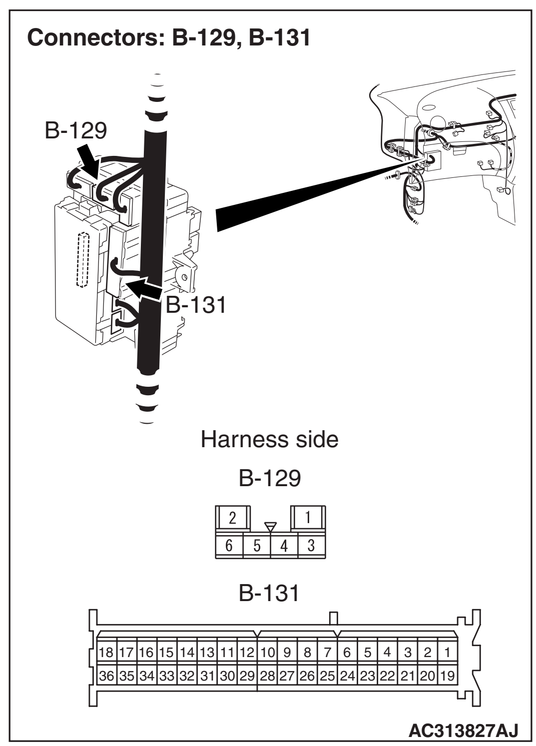
Q: Is the check result normal?

YES : Go to Step 6.

NO : Go to Step 5.

STEP 5. Check the harness wire between the ignition switch (IG1) and combination meter connector B-14 terminal No.31.





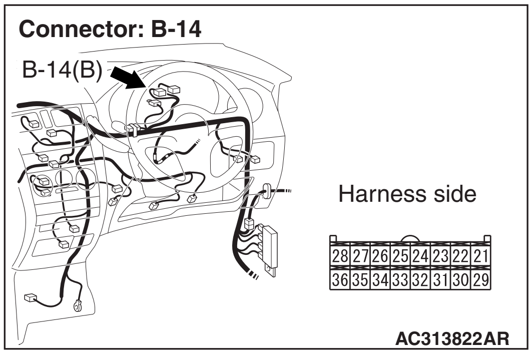
NOTE: Prior to the wiring harness inspection, check joint connector B-22 and junction block connectors B-129 and B-131, and repair if necessary.

Q: Is the wiring harness between the ignition switch (IG1) and combination meter connector B-14 terminal No.31 in good condition?

YES : Retest the system.

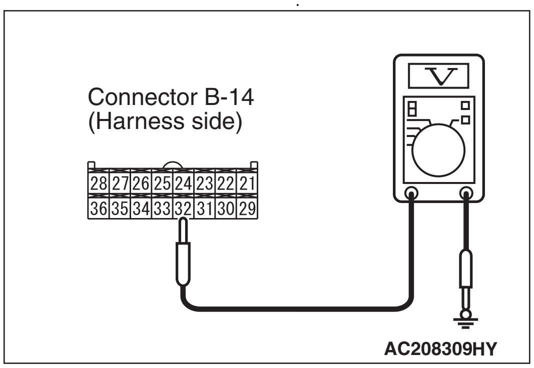
NO : Repair the wiring harness.

STEP 6. Voltage measurement at combination meter connector B-14.



Disconnect the connector, and measure at the wiring harness side.

- Ignition switch: ON



Voltage between combination meter connector B-14 terminal No.32 and body earth

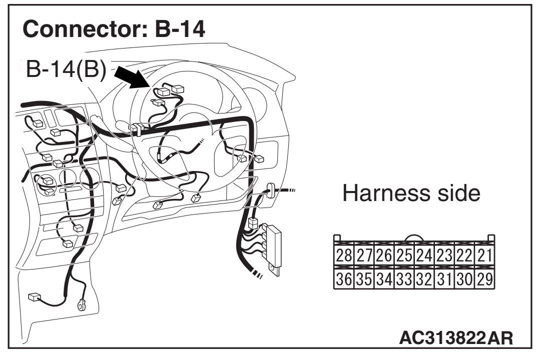
OK: System voltage

Q: Is the check result normal?

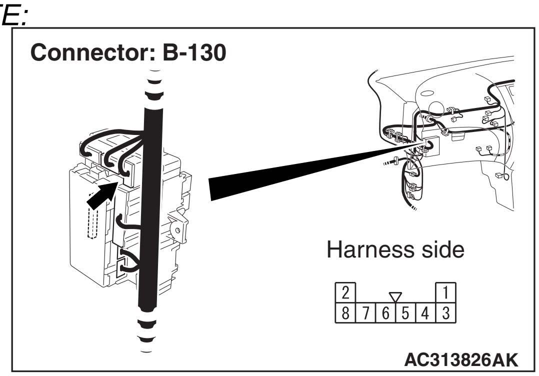
YES : Go to Step 8.

NO : Go to Step 7.

STEP 7. Check the harness wire between the ignition switch (IG2) and combination meter connector B-14 terminal No.32.



NOTE:



Prior to the wiring harness inspection, check junction block connectors B-130, and repair if necessary.

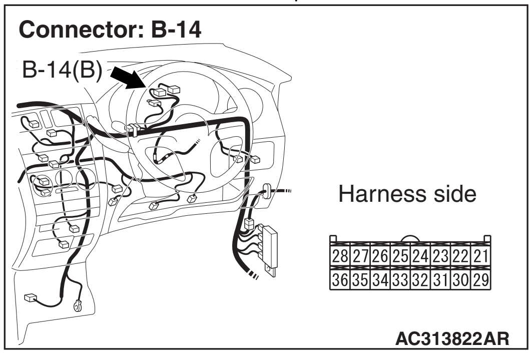
Q: Is the wiring harness between the ignition switch (IG2) and combination meter connector B-14 terminal No.32 in good condition?

YES : Retest the system.

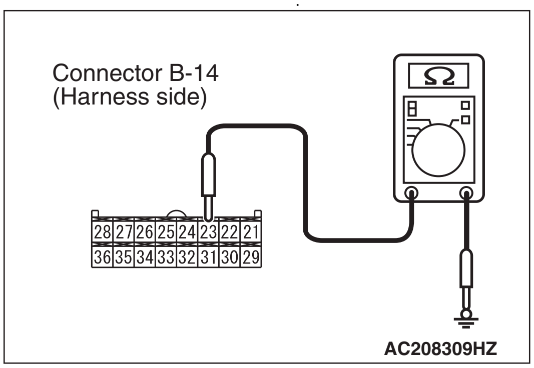
NO : Repair the wiring harness.

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STEP 8. Resistance measurement at combination meter connector B-14.

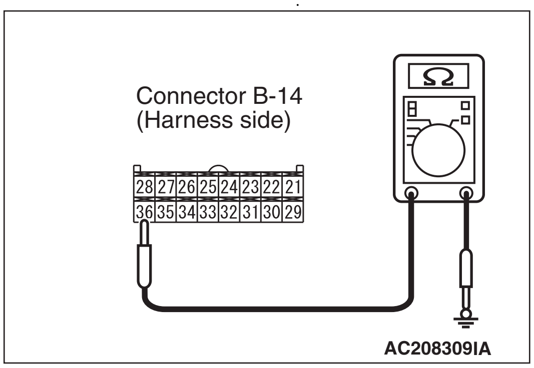


Disconnect the connector, and measure at the wiring harness side.



Resistance between combination meter connector B-14 terminal No.23 and body earth

OK: Continuity exists (2 Ω or less)



Resistance between combination meter connector B-14 terminal No.36 and body earth

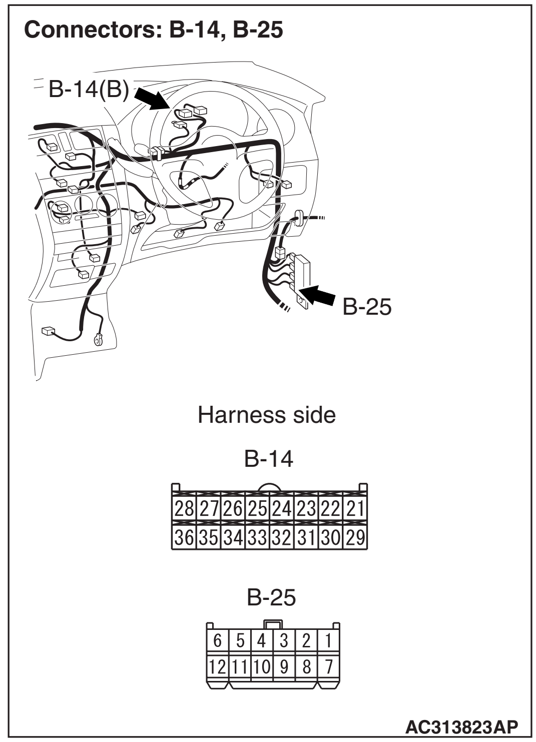
OK: Continuity exists (2 Ω or less)

Q: Is the check result normal?

YES : Go to Step 10.

NO : Go to Step 9.

STEP 9. Check the harness between combination meter connector B-14 terminal No.23, No.36 and body earth.



NOTE: Prior to the wiring harness inspection, check joint connector B-25, and repair if necessary.

Q: Is the wiring harness between the combination meter connector B-14 terminal No.23, No.36 and body earth in good condition?

YES : Retest the system.

NO : Repair the wiring harness.

STEP 10. Retest the system.

Q: Is the check result normal?

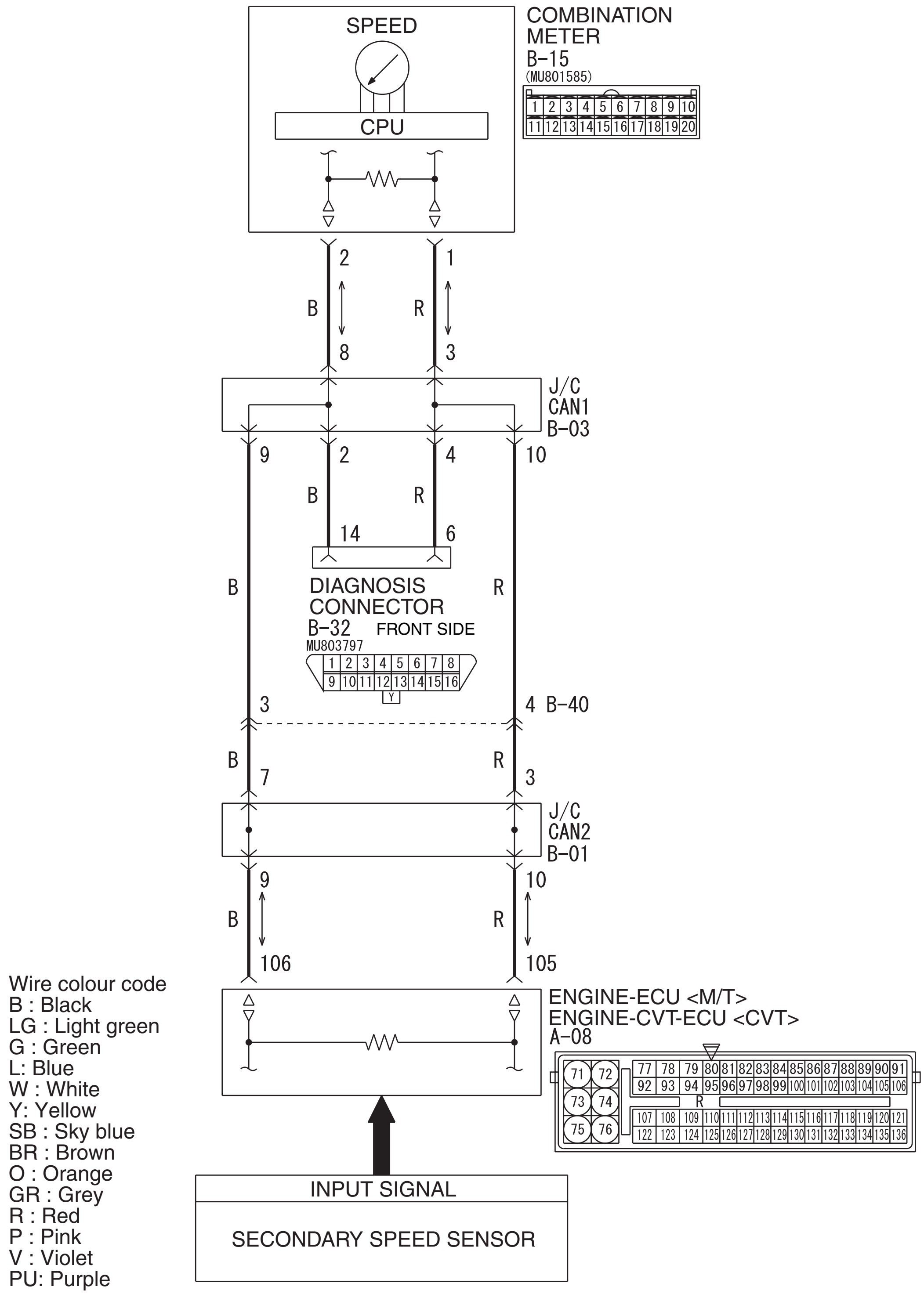
YES : The trouble can be an intermittent malfunction (Refer to GROUP 00, How to Cope with Intermittent Malfunction P.00-13).

NO : Replace the combination meter.

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Inspection Procedure 6: Speedometer does not Work (Other Meters Work).
Inspection Procedure 7: The Fuel Gauge Needle Moves Excessively.

Speedometer Circuit



W6N54L023A

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⚠ CAUTION

When the battery cable is disconnected or the combination meter is removed, the fuel gauge learned value will be erased. To let the display unit re-learn it, enter the vehicle speed (by driving the vehicle or entering simulated vehicle speed) and then stop the vehicle.

COMMENTS ON TROUBLE SYMPTOM

If only the speedometer does not operate, the engine-ECU <M/T> or engine-CVT-ECU <CVT> system, the combination meter, the wiring harness or its connector may be defective. Furthermore, incorrect level of fuel is shown on the gauge, because the display unit can not learn the fuel gauge.

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of engine-ECU <M/T> or engine-CVT-ECU <CVT>
- Malfunction of combination meter

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics

Use the M.U.T.-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54D, Diagnosis - Can Bus Diagnostics Table P.54D-13). After diagnosing the CAN bus lines, go to Step 5.

STEP 2. M.U.T.-III diagnosis code

Check whether the MPI system-related diagnosis code is set.

Q: Is the diagnosis code set?

YES : Diagnose MPI system. (Refer to GROUP 13A <4A9>, Troubleshooting P.13A-20, or GROUP 13B <4G1>, Troubleshooting P.13B-18.) After diagnosing the MPI system, go to Step 5.

NO : Go to Step 3.

STEP 3. M.U.T.-III data list

- Item No.82: Vehicle speed sensor malfunction flag (Refer to P.54A-59).
- Item No.83: Vehicle speed sensor definite flag (Refer to P.54A-59).
- Item No.84: Vehicle stopped flag (Refer to P.54A-59).

Q: Is the check result satisfactory?

YES : Go to Step 4.

NO : Diagnose MPI system. (Refer to GROUP 13A <4A9>, Troubleshooting P.13A-20, or GROUP 13B <4G1>, Troubleshooting P.13B-18.) After diagnosing the MPI system, go to Step 5.

STEP 4. Check the speedometer.

(1) Connect the M.U.T.-III to the diagnosis connector.
(2) Use the M.U.T.-III to enter simulated vehicle speed.

OK: The speedometer shows that simulated vehicle speed.

Q: Is the check result satisfactory?

YES : Go to Step 5.

NO : Replace combination meter, then go to Step 5.

STEP 5. Retest the system.

Check that the speedometer works normally.

Q: Is the check result satisfactory?

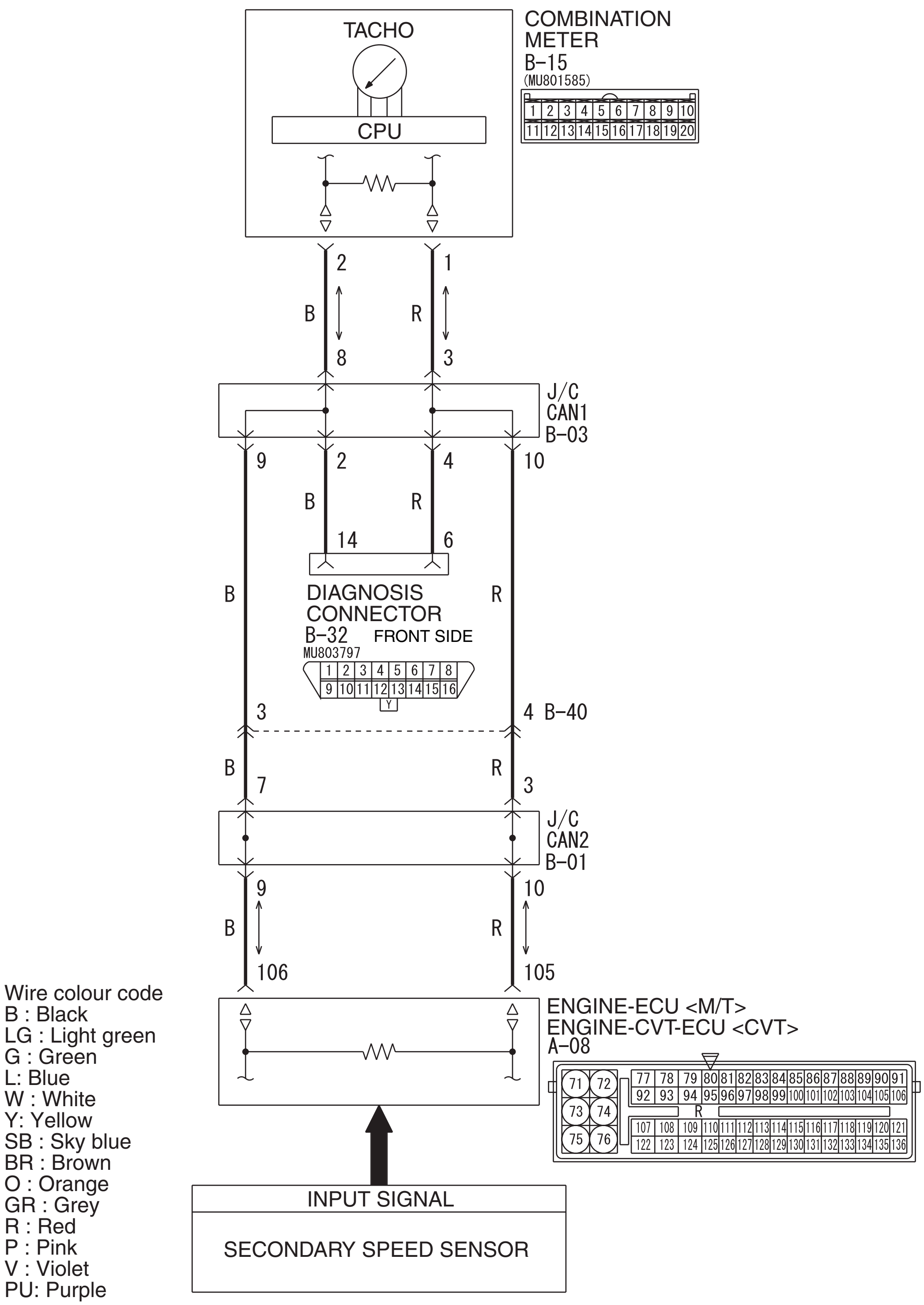
YES : The procedure is complete.

NO : Go to Step 1.

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Inspection Procedure 8: Tachometer does not Work (Other Meters Work).

Tachometer Circuit



W6N54L024A

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Group TOC

COMMENTS ON TROUBLE SYMPTOM

If only the tachometer does not operate, the engine-ECU <M/T> or engine-CVT-ECU <CVT> system may not be sending ignition signal, or the combination meter, the wiring harness or its connector may be defective.

POSSIBLE CAUSES

- Malfunction of combination meter
- Damaged harness wires and connectors

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics

Use the M.U.T.-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.

NO : Repair the CAN bus lines (Refer to GROUP 54D, Diagnosis - Can Bus Diagnostics Table P.54D-13). After diagnosing the CAN bus lines, go to Step 5.

STEP 2. M.U.T.-III other system diagnosis code

Check whether the MPI system-related diagnosis code is set.

Q: Is the diagnosis code set?

YES : Diagnose MPI system. (Refer to GROUP 13A <4A9>, Troubleshooting P.13A-20, or GROUP 13B <4G1>, Troubleshooting P.13B-18.) After diagnosing the MPI system, go to Step 5.

NO : Go to Step 3.

STEP 3. M.U.T.-III data list

- Item No.87: Tachometer (Refer to P.54A-59.)

Q: Is the check result satisfactory?

YES : Go to Step 4.

NO : Diagnose MPI system. (Refer to GROUP 13A <4A9>, Troubleshooting P.13A-20, or GROUP 13B <4G1>, Troubleshooting P.13B-18.) After diagnosing the MPI system, go to Step 5.

STEP 4. M.U.T.-III actuator test

- Item No.84: Tachometer: 0 r/min
- Item No.85: Tachometer: 2000 r/min
- Item No.86: Tachometer: 5000 r/min

OK: The tachometer operates.

Q: Is the check result satisfactory?

YES : Go to Step 5.

NO : Replace the combination meter and then go to Step 5.

STEP 5. Retest the system.

Check that the tachometer works normally.

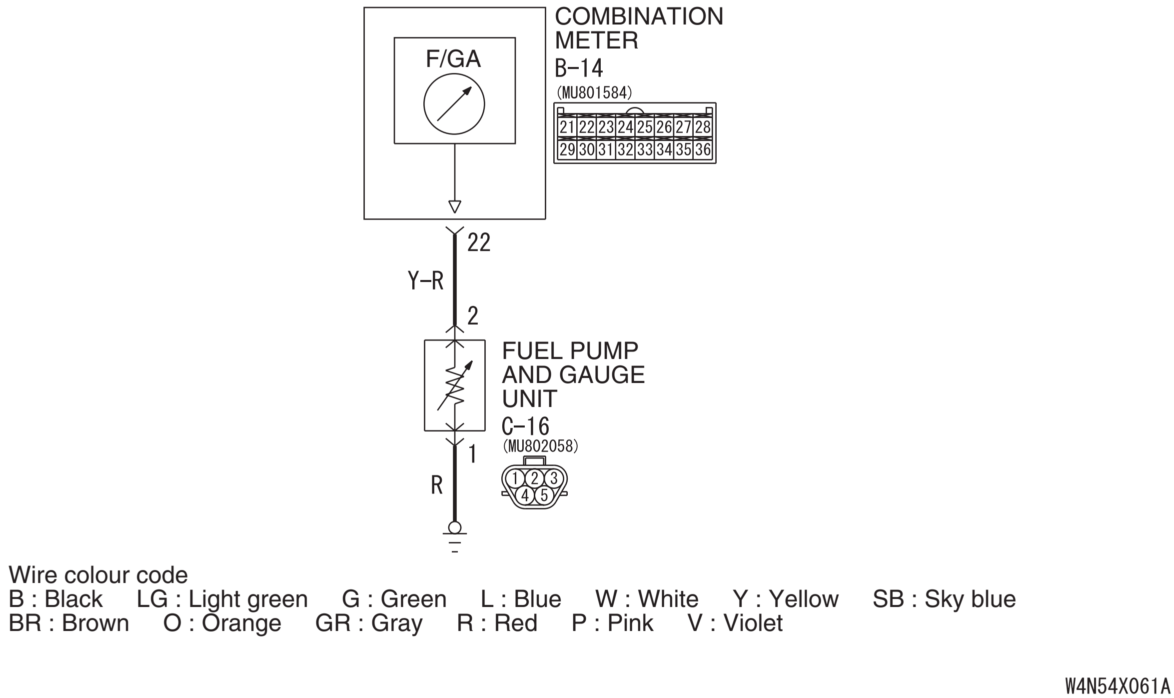
Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Go to Step 1.

Inspection Procedure 9: Fuel Gauge does not Work (Other Meters Work).

Fuel Pump and Gauge Unit Circuit



COMMENTS ON TROUBLE SYMPTOM

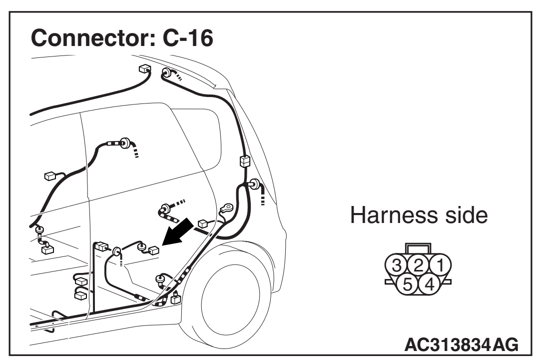
If only the fuel gauge does not operate, the fuel pump and gauge unit, the combination meter, wiring harness or connector(s) may be defective.

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of the fuel pump and gauge unit
- Malfunction of combination meter

DIAGNOSIS PROCEDURE

STEP 1. Connector check: C-16 fuel pump and gauge unit connector



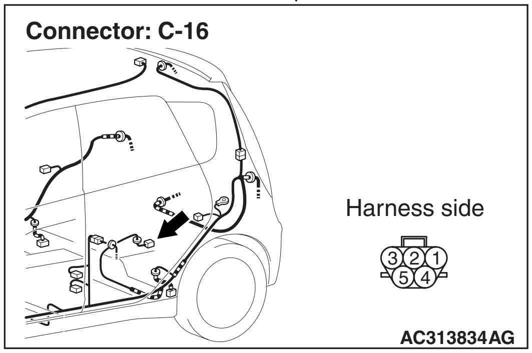
Q: Is the check result normal?

YES : Go to Step 2.

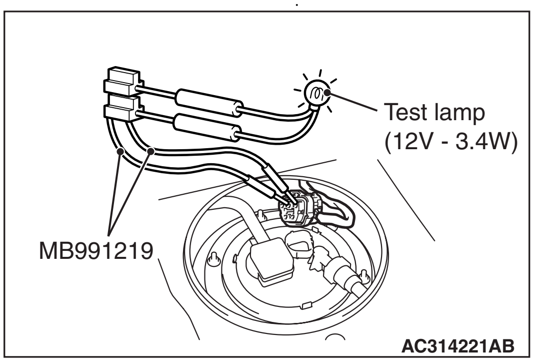
NO : Repair the connector, and then go to Step 9.

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STEP 2. Check the fuel gauge circuit.



Disconnect fuel pump and gauge unit connector C-16.



Use the special tool Check harness (MB991219) to connect a test lamp (12 V - 3.4 W) between the wiring harness connector terminals 1 and 2.

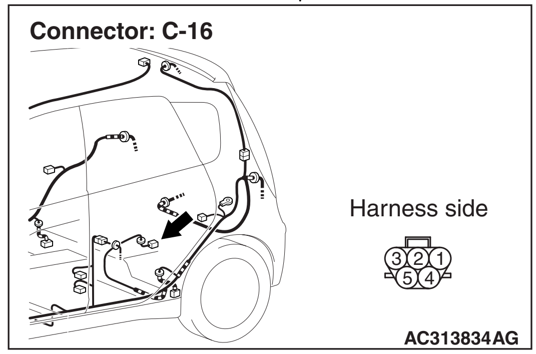
- Turn the Ignition switch to "ON" position.
- Check if the test lamp illuminates.

OK: Illuminates

Q: Is the check result satisfactory?

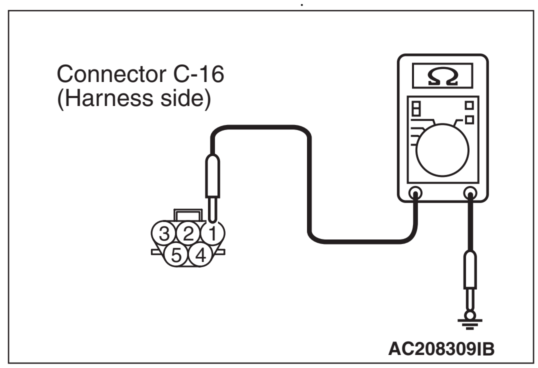
YES : Go to Step 7.
NO : Go to Step 3.

STEP 3. Resistance measurement at fuel pump and gauge unit connector C-16.



Disconnect fuel pump and gauge unit connector C-16, and measure at the wiring harness side.

- Turn the Ignition switch to "LOCK" (OFF) position.
- Disconnect the negative battery terminal.



Continuity between fuel pump and gauge unit connector C-16 terminal No.1 and body earth

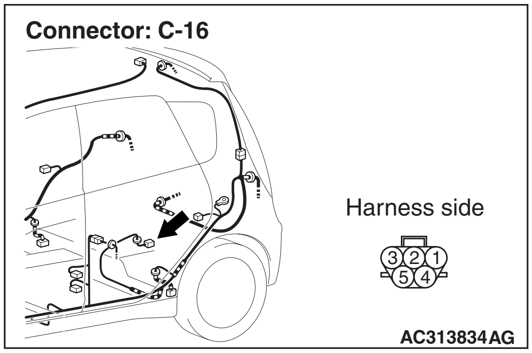
OK: Continuity exists (2 Ω or less)

Q: Is the check result normal?

YES : Go to Step 5.
NO : Go to Step 4.

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STEP 4. Check the wiring harness wire between fuel pump and gauge unit connector C-16 terminal No.1 and body earth.

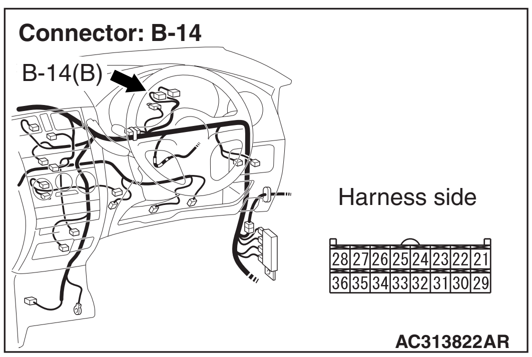


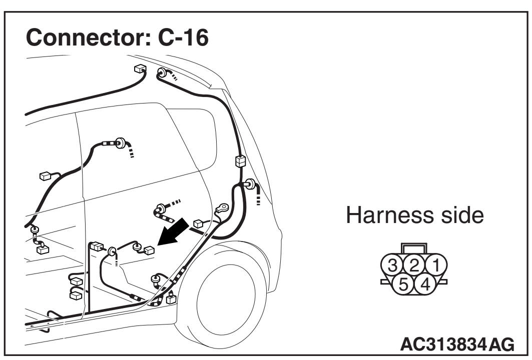
Q: Is the wiring harness between fuel pump and gauge unit connector C-16 terminal No.1 and body earth in good condition?

YES : Go to Step 9.

NO : Repair the harness, and then go to Step 9.

STEP 5. Connector check: B-14 combination meter connector and C-16 fuel pump and gauge unit connector



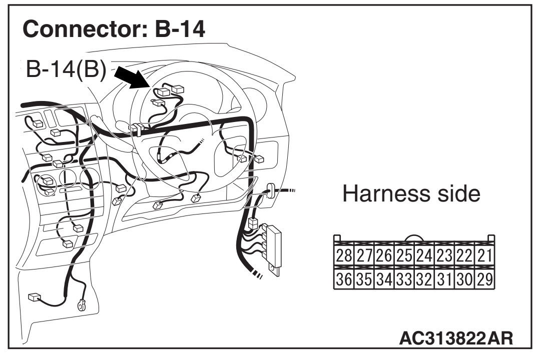


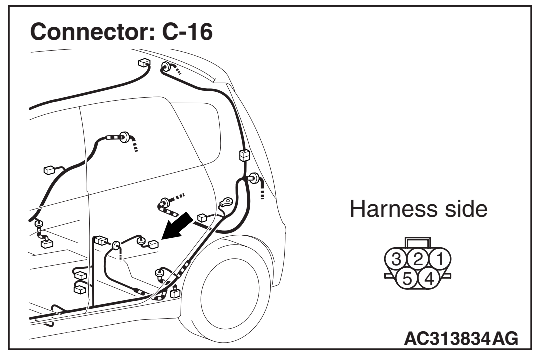
Q: Is the check result satisfactory?

YES : Go to Step 6.

NO : Repair the connector, and then go to Step 9.

STEP 6. Check the wiring harness between combination meter connector B-14 terminal No.22 and fuel pump and gauge unit connector C-16 terminal No.2.





Q: Is the wiring harness between combination meter connector B-14 terminal No.22 and fuel pump and gauge unit connector C-16 terminal No.2 in good condition?

YES : Go to Step 9.

NO : Repair the harness, and then go to Step 9.

STEP 7. M.U.T.-III actuator test

- Item 8C: Fuel gauge: 0 %
- Item 8D: Fuel gauge: 50 %
- Item 8E: Fuel gauge: 100 %

OK: The fuel gauge operates.

Q: Is the check result satisfactory?

YES : Go to Step 8.

NO : After the combination meter is replaced, then go to Step 9.

STEP 8. Retest the system.

Check that the fuel gauge works normally.

Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Replace the fuel pump and gauge unit, and the go to Step 9.

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STEP 9. Retest the system.

Check that the fuel gauge works normally.

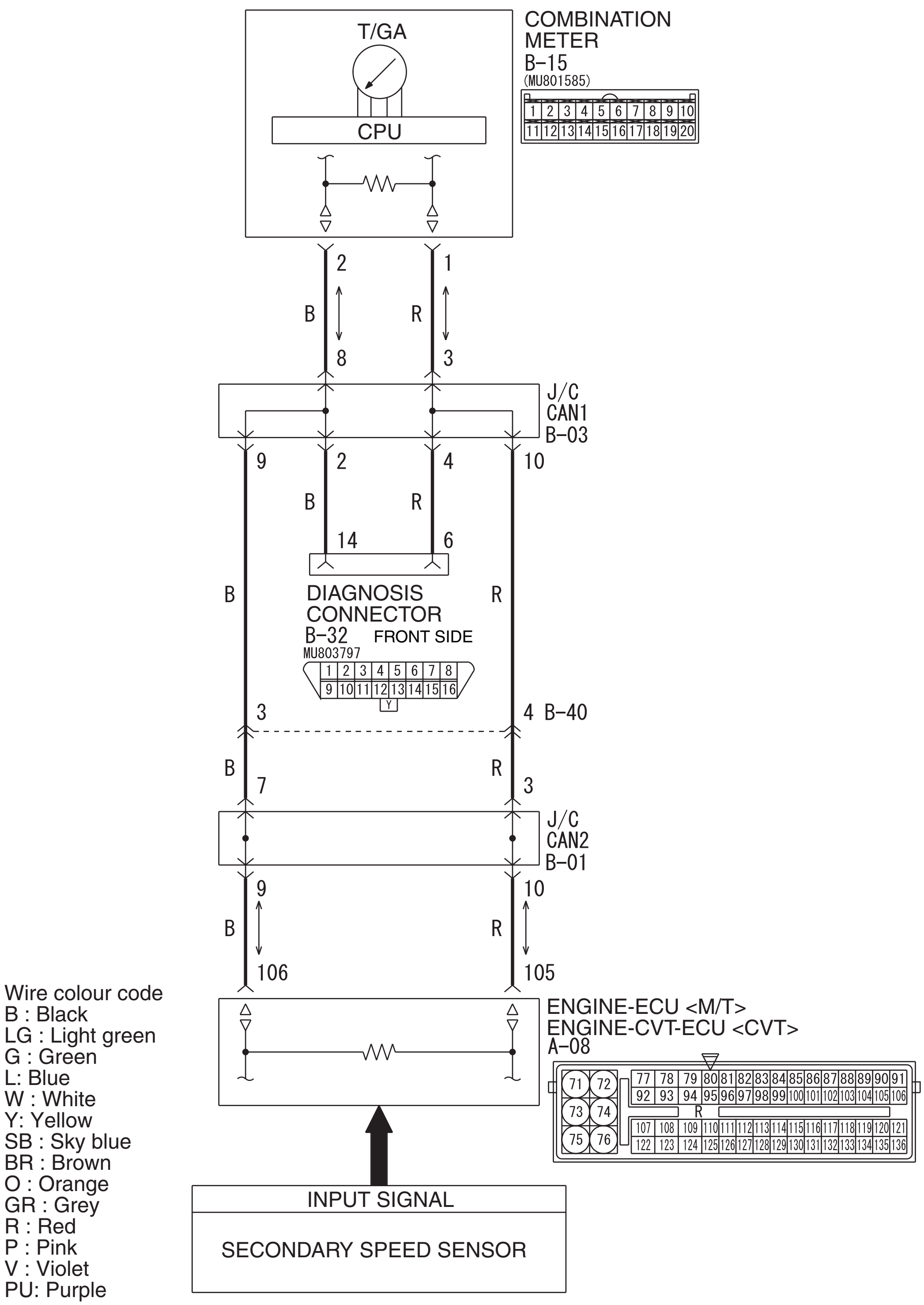
Q: Is the check result satisfactory?

YES : The procedure is complete.

NO : Return to Step 1.

Inspection Procedure 10: Engine Coolant Temperature Gauge does not Work (Other Meters Work).

Engine Coolant Temperature Gauge Circuit



W6N54L025A

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COMMENTS ON TROUBLE SYMPTOM

If only the engine coolant temperature gauge does not operate, the engine-ECU <M/T> or engine-CVT-ECU <CVT> system, the combination meter, the wiring harness or its connector may be defective.

POSSIBLE CAUSES

- Damaged harness wires and connectors
- Malfunction of engine-ECU <M/T> or engine-CVT-ECU <CVT>
- Malfunction of combination meter

DIAGNOSIS PROCEDURE

STEP 1. M.U.T.-III CAN bus diagnostics

Use the M.U.T.-III to diagnose the CAN bus lines.

Q: Is the check result satisfactory?

YES : Go to Step 2.
NO : Repair the CAN bus lines (Refer to GROUP 54D, Diagnosis - Can Bus Diagnostics Table P.54D-13). After diagnosing the CAN bus lines, go to Step 5.

STEP 2. M.U.T.-III other system diagnosis code

Check if an MPI system diagnosis code is set.

Q: Is the diagnosis code set?

YES : Diagnose MPI system. (Refer to GROUP 13A <4A9>, Troubleshooting P.13A-20, or GROUP 13B <4G1>, Troubleshooting P.13B-18.) After diagnosing the MPI system, go to Step 5.
NO : Go to Step 3.

STEP 3. M.U.T.-III data list

- Item No.8C: Water thermometer (Refer to P.54A-59.)
- Item No.8E: Water thermometer definite flag (Refer to P.54A-59.)

Q: Is the check result satisfactory?

YES : Go to Step 4.
NO : Diagnose MPI system. (Refer to GROUP 13A <4A9>, Troubleshooting P.13A-20, or GROUP 13B <4G1>, Troubleshooting P.13B-18.) After diagnosing the MPI system, go to Step 5.

STEP 4. M.U.T.-III actuator test

- Item No.88: Water temperature gauge: 0 °C
- Item No.89: Water temperature gauge: 85 °C
- Item No.8A: Water temperature gauge: 126 °C

OK: The water thermometer operates.

Q: Is the check result satisfactory?

YES : Go to Step 5.
NO : Replace combination meter and then go to step 5.

STEP 5. Retest the system.

Check to see that the engine coolant temperature gauge operates normally.

Q: Is the check result satisfactory?

YES : The procedure is complete.
NO : Go to Step 1.

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DATA LIST REFERENCE TABLE

M1543007300916

The following items of the ECU input data can be read using M.U.T.-III.

Item No.	Check items	Check conditions	Normal conditions
80	Speedometer	Perform a test run of the vehicle.	Speedometer displayed value and M.U.T.-III displayed value agree with each other.*
81	Speedometer (target value)	Perform a test run of the vehicle.	Speedometer displayed value and M.U.T.-III displayed value agree with each other.*
82	Vehicle speed sensor malfunction flag	Ignition switch : ON	Without
83	Vehicle speed sensor definite flag	Ignition switch : ON	Set
84	Vehicle stopped flag	• Ignition switch : ON • Vehicle speed 0 km/h	Set
87	Tachometer	Start the engine.	Tachometer displayed value and M.U.T.-III displayed value agree with each other.
89	Fuel gauge	–	Fuel gauge unit resistance value and M.U.T.-III displayed value agree with each other.
8A	Fuel gauge (target value)	–	Fuel gauge and M.U.T.-III displayed values agree with each other.
8C	Water thermometer	Ignition switch : ON	Water thermometer and M.U.T.-III displayed values agree with each other.
8E	Water thermometer definite flag	Ignition switch : ON	Set
90	Odometer	–	Odometer displayed value and M.U.T.-III displayed value agree with each other.
A0	Door-ajar warning light	All doors are closed	OFF
		Any door is open	ON
A1	SRS warning lamp	–	OFF
A2	ABS warning lamp	–	OFF
A3	Hydraulic pressure warning lamp	–	OFF
A4	Charging warning lamp	–	OFF
A5	Engine warning lamp	–	OFF
A6	Fuel reserve warning lamp	–	OFF

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Item No.	Check items	Check conditions	Normal conditions
A7	Brake warning lamp	• Ignition switch : ON • Parking brake : At release	OFF
		• Ignition switch : ON • Parking brake : OPERATION	ON
A8	Seat belt warning lamp	• Ignition switch : ON • Driver's seatbelt : fastened	OFF
		• Ignition switch : ON • Driver's seatbelt : Not fastened	ON
A9	Electric power steering warning lamp	–	OFF
B1	Turn-signal indicator (RH)	Turn signal lamp : OFF or only left side lamp illuminates	OFF
		Turn signal lamp : Right side lamp illuminates	ON
B2	Turn-signal indicator (LH)	Turn signal lamp : OFF or only right side lamp illuminates	OFF
		Turn signal lamp : Left side lamp illuminates	ON
B3	Front fog lamp indicator	Fog lamp : OFF	OFF
		Fog lamp : ON	ON
B4	High-beam indicator	Headlamps : OFF or low beam illuminates	OFF
		Headlamps : High beam illuminates	ON
C1	CVT indicator: P	Shift position : Other than P position	OFF
		Shift position : P position	ON
C2	CVT indicator: R	Shift position : Other than R position	OFF
		Shift position : R position	ON
C3	CVT indicator: N	Shift position : Other than N position	OFF
		Shift position : N position	ON
C4	CVT indicator: D	Shift position : Other than D position	OFF
		Shift position : D position	ON
C5	CVT indicator: Ds	Shift position : Other than Ds position	OFF
		Shift position : Ds position	ON

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Item No.	Check items	Check conditions	Normal conditions
C6	CVT indicator: L	Shift position : Other than L position	OFF
		Shift position : L position	ON
D3	ASC OFF indicator lamp	ASC OFF indicator lamp : OFF	OFF
		ASC OFF indicator lamp : ON	ON
D4	ASC indicator lamp	ASC indicator lamp : OFF	OFF
		ASC indicator lamp : ON	ON

*NOTE: * indicates that the slowest vehicle speed is 5 km/h.*

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ACTUATOR TEST TABLE

M1543007400333

Item No.	Check items	Test content	Check conditions	Normal conditions
80	Speedometer	Set the speedometer to 0 km/h	Turn the ignition switch to the ON position.	Speedometer shows 0 km/h
81		Set the speedometer to 40 km/h		Speedometer shows 40 km/h
82		Set the speedometer to 100 km/h		Speedometer shows 100 km/h
84	Tachometer	Set the tachometer to 0 r/min	Turn the ignition switch to the ON position.	Tachometer shows 0 r/min
85		Set the tachometer to 2000 r/min		Tachometer shows 2000 r/min
86		Set the tachometer to 5000 r/min		Tachometer shows 5000 r/min
88	Water thermometer	Set the water thermometer to 0 °C	Turn the ignition switch to the ON position.	Water thermometer shows 0 °C
89		Set the water thermometer to 85 °C		Water thermometer shows 85 °C
8A		Set the water thermometer to 126 °C		Water thermometer shows 126 °C
8C	Fuel gauge	Set the fuel gauge to 0 %	Turn the ignition switch to the ON position.	Fuel gauge shows 0 %
8D		Set the fuel gauge to 50 %		Fuel gauge shows 50 %
8E		Set the fuel gauge to 100 %		Fuel gauge shows 100 %
90	Fuel gauge (target value)	Set the fuel gauge to 0 %	Turn the ignition switch to the ON position.	Fuel gauge shows 0 %
91		Set the fuel gauge to 50 %		Fuel gauge shows 50 %
92		Set the fuel gauge to 100 %		Fuel gauge shows 100 %
93	Combination meter illumination	Set the combination meter illumination to 0 %	Turn the ignition switch to the ON position.	Combination meter illumination is 0 %
94		Set the combination meter illumination to 50 %		Combination meter illumination is 50 %
95		Set the combination meter illumination to 100 %		Combination meter illumination is 100 %

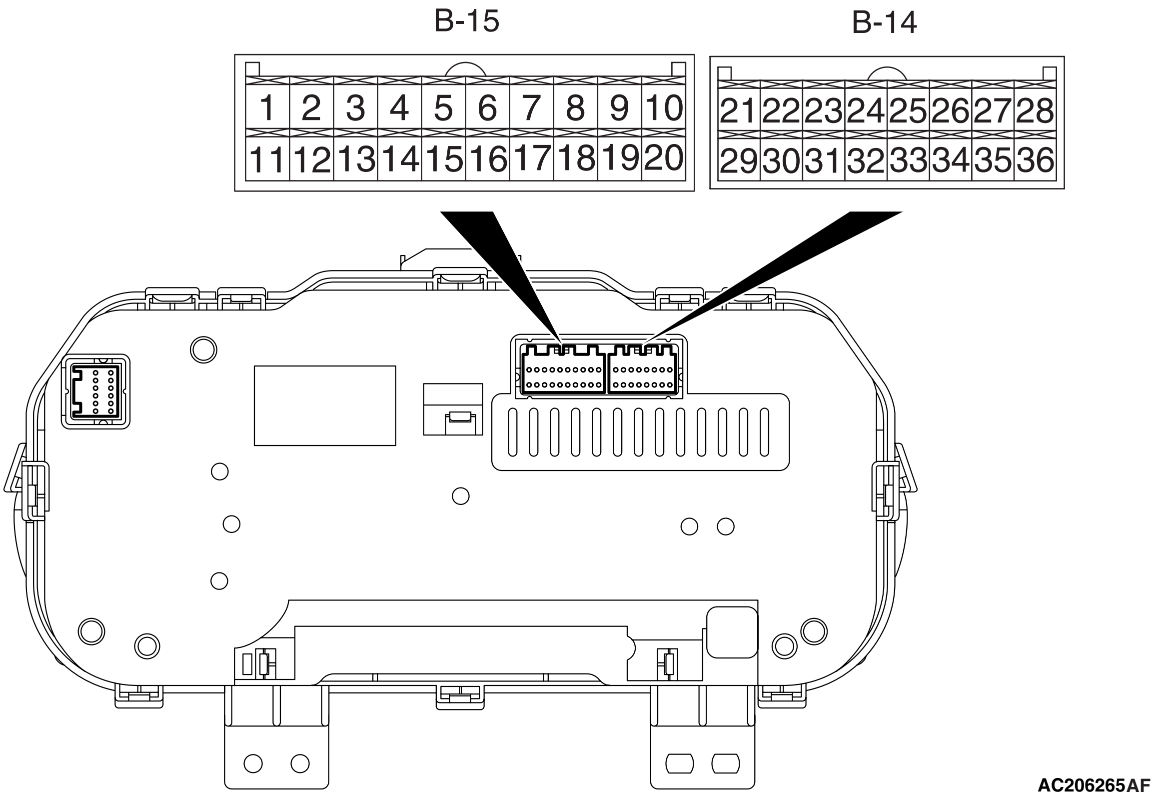
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Item No.	Check items	Test content	Check conditions	Normal conditions
A0	Indicator lamp and warning lamp	Illuminate the indicator lamp and the warning lamp.	Turn the ignition switch to the ON position.	The turn-signal lamps, the door lamps, the fog lamps, the electric power steering warning lamp, the high-beam indicator, the brake warning lamp, the high coolant temperature warning lamp, the CHECK ENGINE warning lamp, the charge warning lamp, the oil pressure indicator lamp, the SRS, the ABS, the seat belt and the fuel warning lamp illuminate.
A1		Extinguish the indicator lamps and the warning lamps.		The turn-signal lamps, the door lamps, the fog lamps, the electric power steering warning lamp, the high-beam indicator, the brake warning lamp, the high coolant temperature warning lamp, the CHECK ENGINE warning lamp, the charge warning lamp, the oil pressure indicator lamp, the SRS, the ABS, the seat belt and the fuel warning lamp extinguish.
A2	Shift indicator lamp	Illuminate the shift indicator lamp.	Turn the ignition switch to the ON position.	The shift indicator lamp illuminates.
A3		Extinguish the shift indicator lamp.		The shift indicator lamp extinguishes.
A5	Indicator lamp	Illuminate the indicator lamp.	Turn the ignition switch to the ON position.	The tail lamp indicator lamp illuminates.
A6		Extinguish the indicator lamp.		The tail lamp indicator lamp extinguishes.

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CHECK AT ECU TERMINALS

M1543007601255



Terminal No.	Check items	Check conditions	Normal conditions
22	Input of fuel gauge	Always	–
23	Illumination (earth)	Always	0 V
24	Illumination (power supply)	Illumination switch: ON	System voltage
25	Oil pressure switch	Ignition switch: ON and before starting the engine	–
28	Input of parking brake switch and brake fluid level switch	• Ignition switch: ON and parking brake switch: ON • Ignition switch: ON and brake fluid level switch: ON	–
27	Input of seatbelt switch	Ignition switch: ON and the driver's seat belt is unfastened.	–
31	Power supply from ignition switch (IG1)	Ignition switch: ON	System voltage
32	Power supply from ignition switch (IG2)	Ignition switch: ON	System voltage
33	Battery power supply	Always	System voltage
36	Earth	Always	0 V

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ON-VEHICLE SERVICE

CHECK THE SPEEDOMETER.

M1543000900995

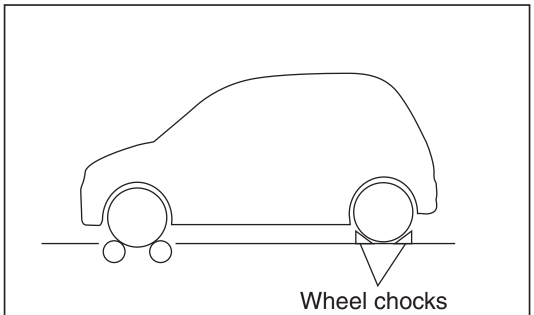
⚠ CAUTION

Since the diagnosis code may be stored in the ABS-ECU when checking the speedometer with speedometer tester, erase the diagnosis code.

⚠ CAUTION

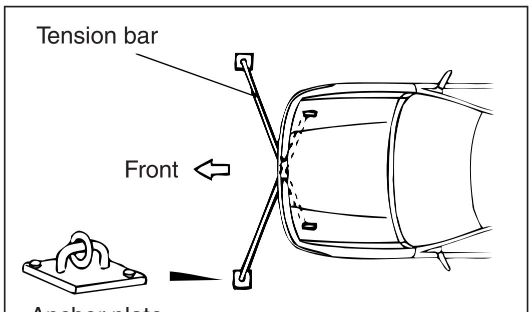
Do not accelerate or decelerate suddenly during servicing work.

1. Check that the current tyre inflation pressures meet the inflation pressure label.



AC105247AB

2. Chock the rear wheels and depress the parking brake pedal.



AC001288 AB

3. For prevention of front wheel lateral runout, install extension fittings on front towing eye and tie down hook, and install both ends of anchor plate.
4. For prevention of vehicle from starting out, install chain or wire (the other end of which is tightly fixed on rear towing eye) on the vehicle.
5. Check that the speedometer indicating range is within the standard value or the needle fluctuation is within the limit.

Standard value:

Speed km/h	Speedometer indicating tolerance km/h
20	20 - 24
40	40 - 44
80	80.5 - 85.5
120	121.5 - 127.5
160	162.5 - 169.5
200	203.5 - 211.5

Limit: Needle fluctuation (Vehicle speed is 35 km/h or more) ± 3 km/h

TACHOMETER CHECK

M1543001000791

Check that the tachometer indicating tolerance is within the standard value when the actuator tests (item No.85 and 86) are performed using M.U.T.-III.

NOTE: The value in parentheses is a reference value.

Standard value:

Engine speed r/min	Tachometer indicating tolerance r/min
700	± 70
(2,000)	(± 80)
3,000	± 120
(4,000)	(± 120)
5,000	± 120
6,000	± 120

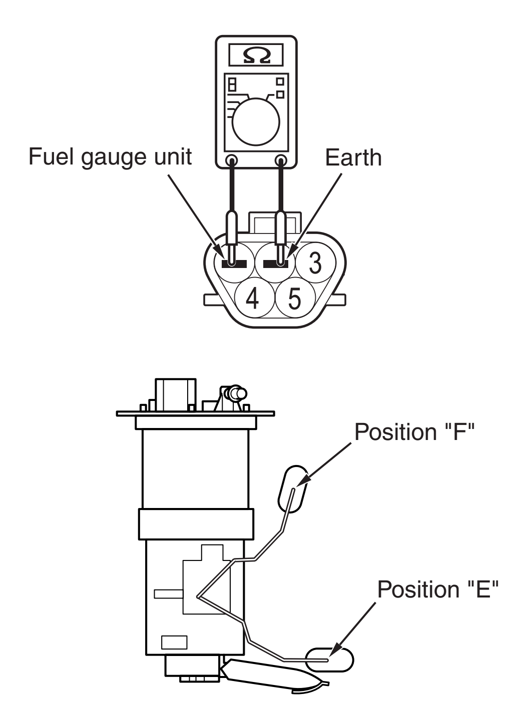
FUEL TANK GAUGE UNIT CHECK

M1543001200944

Remove the fuel tank gauge unit and fuel tank pump and gauge unit assembly (Refer to GROUP 13C, Fuel Tank P.13C-5).

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NOMINAL RESISTANCE OF THE FUEL GAUGE UNIT



AC400048AB

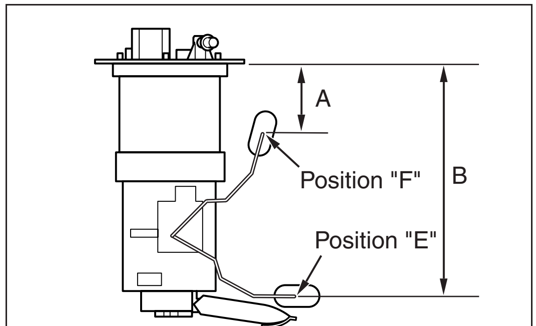
When float of the fuel gauge unit is in stopper positions "F" and "E", ensure that resistance between the fuel gauge unit terminal and earth terminal is within the standard value.

Standard value:

Float position	Gauge resistance Ω
Stopper position "F"	13.0 ± 1
Stopper position "E"	120.0 ± 1

When the float is moved slowly between stopper positions "F" and "E", ensure that the resistance is smoothly changing.

FUEL GAUGE UNIT FLOAT HEIGHT



AC400049AB

When float is moved to contact the float arm on the stopper, ensure that stopper positions "F" (highest A) and "E" (lowest B) are within the standard value.

Standard value:

Float position	Float height mm
Stopper position "F" (highest A)	57.7
Stopper position "E" (lowest B)	215

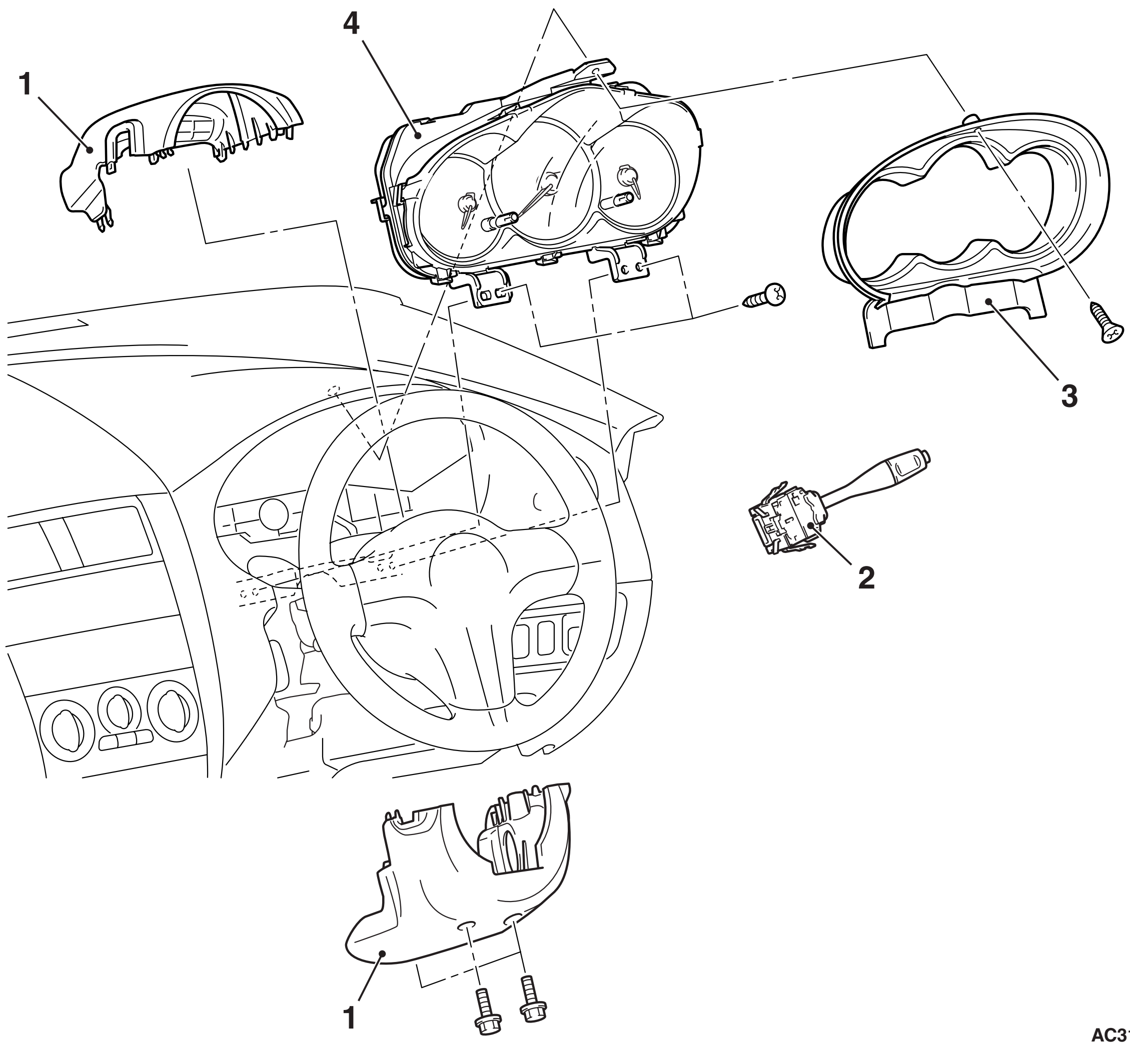
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REMOVAL AND INSTALLATION

M1543019800156

⚠ CAUTION

When the battery cable is disconnected or the combination meter is removed, the fuel gauge learned value will be erased. To let the display unit re-learn it, enter the vehicle speed (by driving the vehicle or entering simulated vehicle speed) and then stop the vehicle. Service on a level surface (If the vehicle is inclined, the measurement value will go out).



Removal steps

1. Steering column cover
2. Lighting switch

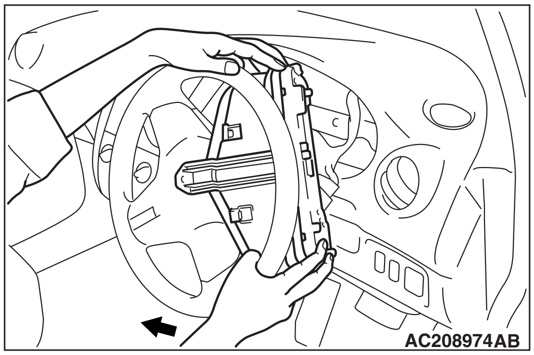
Removal steps (Continued)

3. Combination meter bezel (Refer to GROUP 52A, Instrument Panel Assembly P.52A-3).
4. <<**A**>> Combination meter assembly

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Group TOC

REMOVAL SERVICE POINT

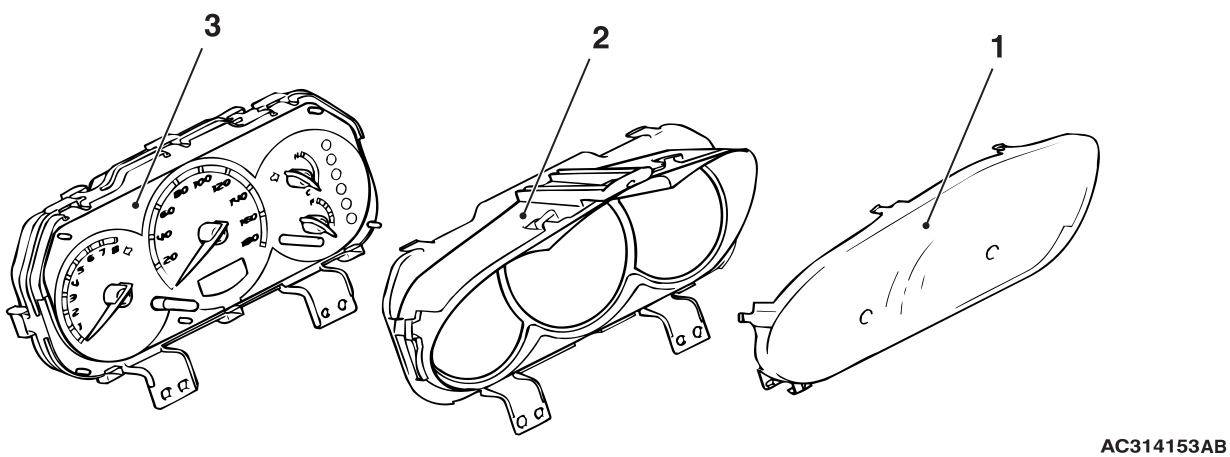
<<A>>COMBINATION METER ASSEMBLY REMOVAL



Turn the ignition switch to the ACC or ON position, and then engage the upper mounting part of combination meter between the steering wheel spoke. Rotate the steering wheel toward the arrow direction while pushing the combination meter gently to remove the combination meter.

DISASSEMBLY AND REASSEMBLY

M1543019900153



Disassembly steps

1. Glass

Disassembly steps (Continued)

2. Window plate
3. Meter sub assembly

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Group TOC

HEADLAMP

SERVICE SPECIFICATIONS

M1542000300655

Item			Standard value	Limit
Headlamp aiming	Low-beam	Vertical direction	60 mm below horizontal (H)	–
		Horizontal direction	15° sloping section intersects the vertical line (V)	–
	High-beam	Vertical direction	Within 0.40°below horizontal (H)	–
Headlamp luminous intensity measurement cd (Corresponding to the illumination 40 m ahead of the vehicle at low-beam)			–	30,000 cd or more

PRECAUTIONS ON HOW TO USE THE HEADLAMP ASSEMBLY

Be careful with the following items as resin lenses are used in the headlamp assembly.

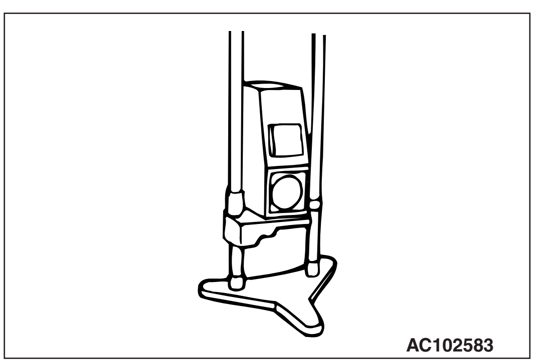
- Don't illuminate the headlamp for three minutes or more when the headlamp is covered with scratch protector.
- Don't tape the outer lens.
- Don't scratch the outer lens surface with a sharp edged special tool.
- Use the specified wax remover and rinse the wax off cleanly.
- Use the specified genuine bulb.

ON-VEHICLE SERVICE

HEADLAMP AIMING

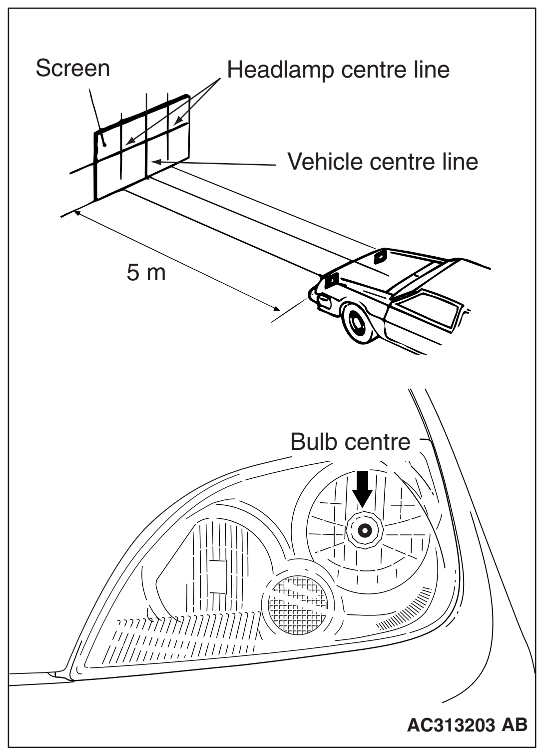
M1542000900732

<USING A BEAM SETTING EQUIPMENT>



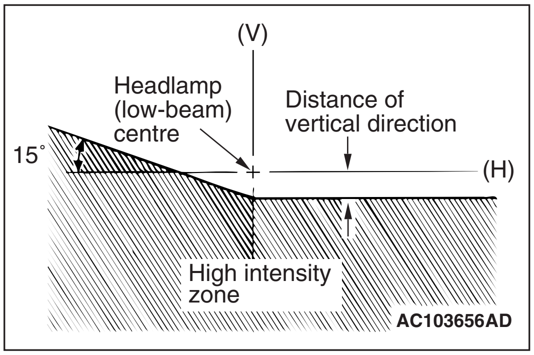
1. The headlamps should be aimed with the proper beam setting equipment, and in accordance with the equipment manufacture's instructions.
2. Alternately turn the adjusting screw to adjust the headlamp aiming.

<USING A SCREEN> (LOW -BEAM)



1. Inflate the tyres to the specified pressures and there should be no other load in the vehicles other than driver or substituted weight of approximately 75 kg placed in driver's position.
2. Set the distance between the screen and the centre marks of the headlamps as shown in the illumination.

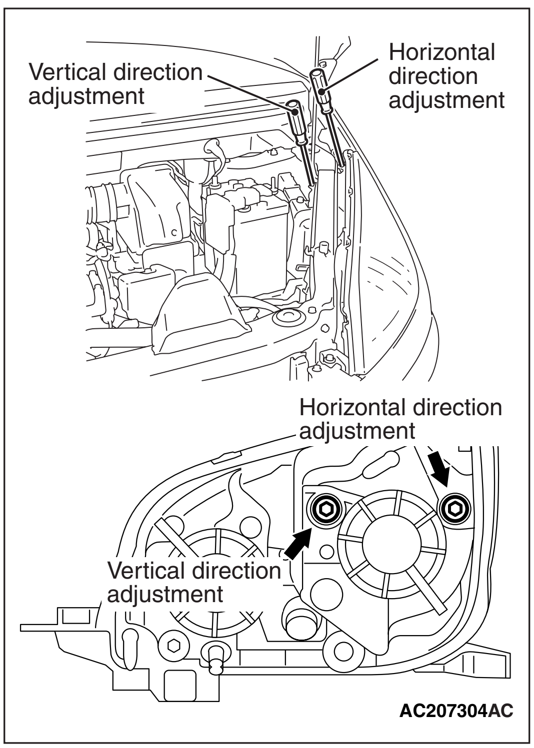
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3. Check if the beam shining onto the screen is at the standard value.

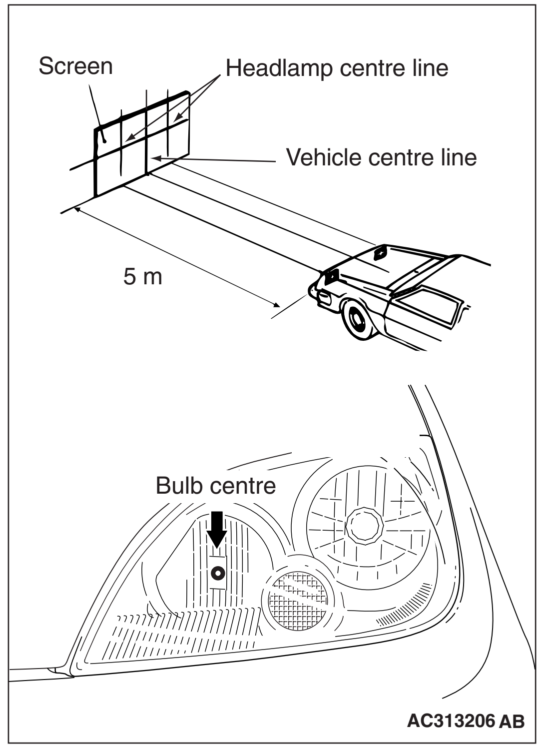
Standard value:
(Vertical direction) 60 mm below horizontal (H)
(Horizontal direction) 15° sloping section intersects the vertical line (V)

⚠ CAUTION
Be sure to adjust the aiming adjustment screw in the tightening direction.



4. Alternately turn the adjusting screw to adjust the headlamp aiming.

<USING A SCREEN> (HIGH-BEAM)



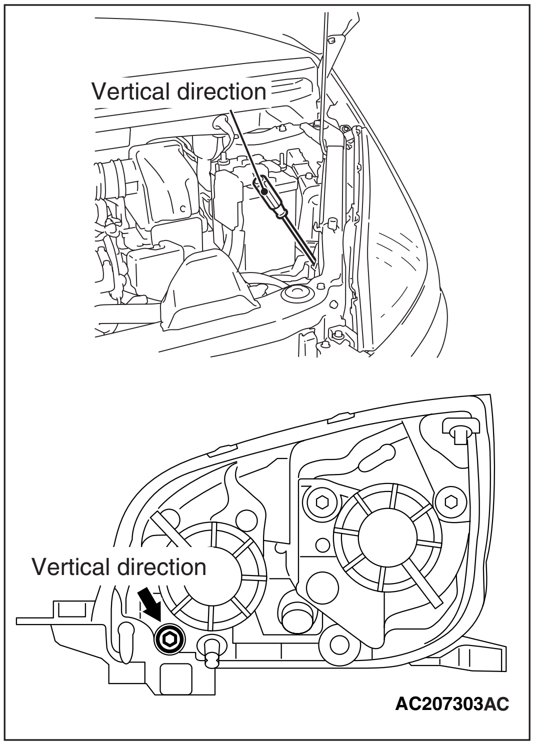
1. Inflate the tyres to the specified pressures and there should be no other load in the vehicles other than driver or substituted weight of approximately 75 kg placed in driver's position.
2. Set the distance between the screen and the centre marks of the headlamps as shown in the illumination.
3. Check if the beam shining onto the screen is at the standard value.

Standard value:
(Vertical direction) Within 0.40°below horizontal (H)

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⚠ **CAUTION**

Be sure to adjust the aiming adjustment screw in the tightening direction.



4. Alternately turn the adjusting screw to adjust the headlamp aiming.

HEADLAMP INTENSITY MEASUREMENT

M1542001000602

Using a photometer, and following its manufacture's instruction manual, measure the headlamp intensity and check to be sure that the limit value is satisfied.

Limit: 30,000 cd or more

NOTE:

1. *When measuring the intensity, maintain an engine speed of 2,000 r/min, with the battery in the charging condition.*
2. *There may be special local regulations pertaining to headlamp intensity, be sure to make any adjustments necessary to satisfy such regulations.*
3. *If an illuminometer is used to make the measurements, convert its values to photometer values by using the following formula.*

   $I = Er^2$ *Where:*

   I=intensity (cd)

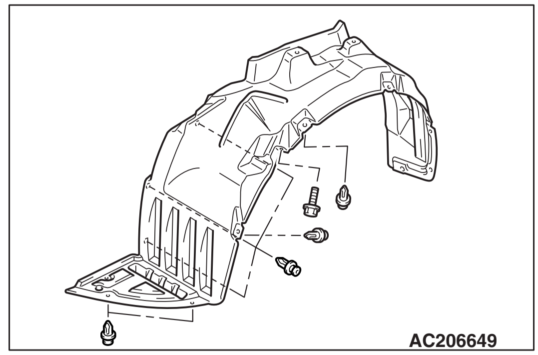
   E=illumination (lux)

   r=distance (m) from headlamps to illuminometer

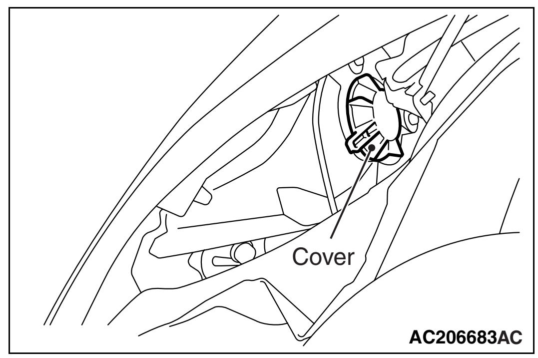
BULB REPLACEMENT

M1542001301004

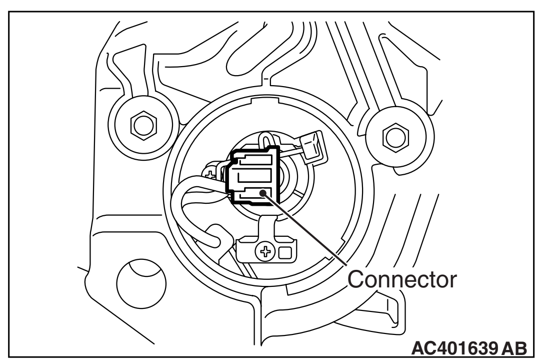
HEADLAMP BULB <LOW BEAM> REPLACEMENT



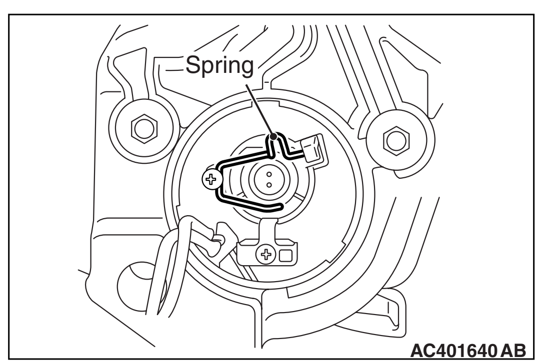
1. Remove the splash shield assembling bolts and clips as shown.



2. Rotate the cover to remove.



3. Disconnect the connector.



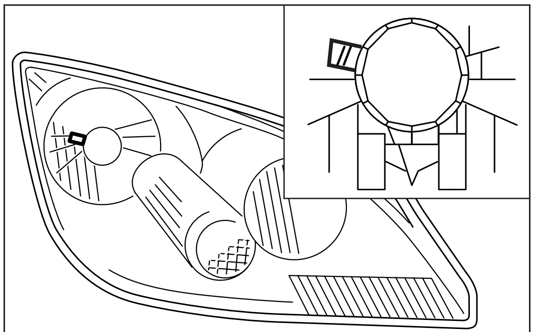
4. Remove the spring.

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Group TOC

⚠ CAUTION

Don't touch the bulb surface with bare hands or dirty gloves. If the bulb surface (glass part) gets dirty, clean it with alcohol or thinner immediately and dry well, and then install it.

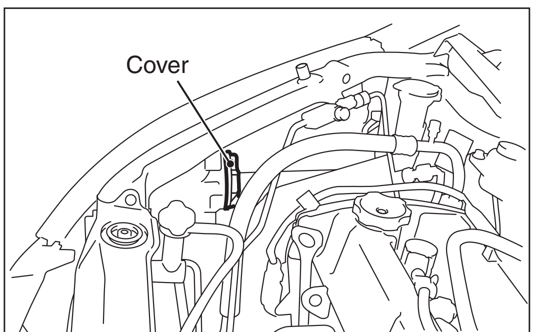
5. Remove the bulb.



AC401940

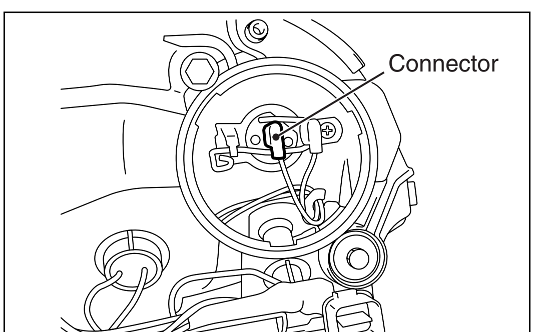
6. Replace the bulb, and check the spring is installed securely through the headlamp lens.
7. Connect the connector securely.

HEADLAMP BULB <HIGH BEAM> REPLACEMENT



AC401642 AB

1. Rotate the cover to remove.

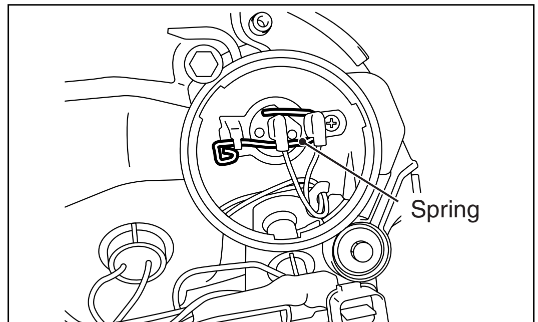


AC401641AB

2. Disconnect the connector.

⚠ CAUTION

Don't touch the bulb surface with bare hands or dirty gloves. If the bulb surface (glass part) gets dirty, clean it with alcohol or thinner immediately and dry well, and then install it.



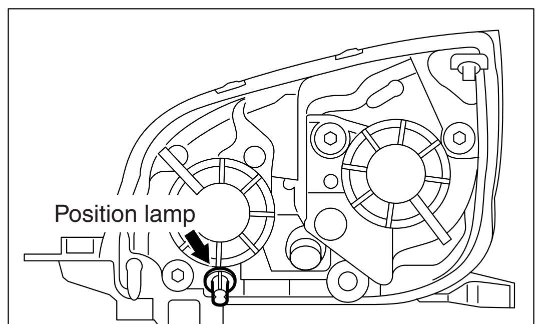
AC206684AC

3. Remove the spring to withdraw the bulb.
4. Replace the bulb, and connect securely the connector.

POSITION LAMP BULB REPLACEMENT

⚠ CAUTION

Don't touch the bulb surface with bare hands or dirty gloves. If the bulb surface (glass part) gets dirty, clean it with alcohol or thinner immediately and dry well, and then install it.



AC205030AC

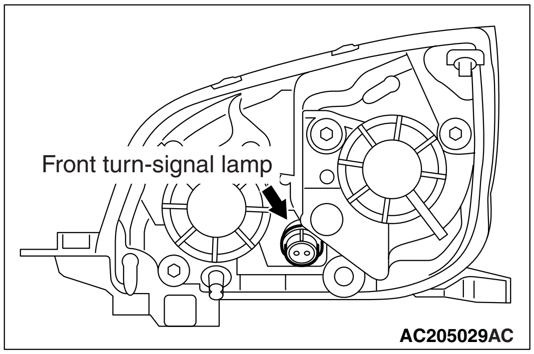
Disconnect the connector, and twist the position lamp socket to remove it.

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FRONT TURN SIGNAL LAMP BULB REPLACEMENT

⚠ CAUTION

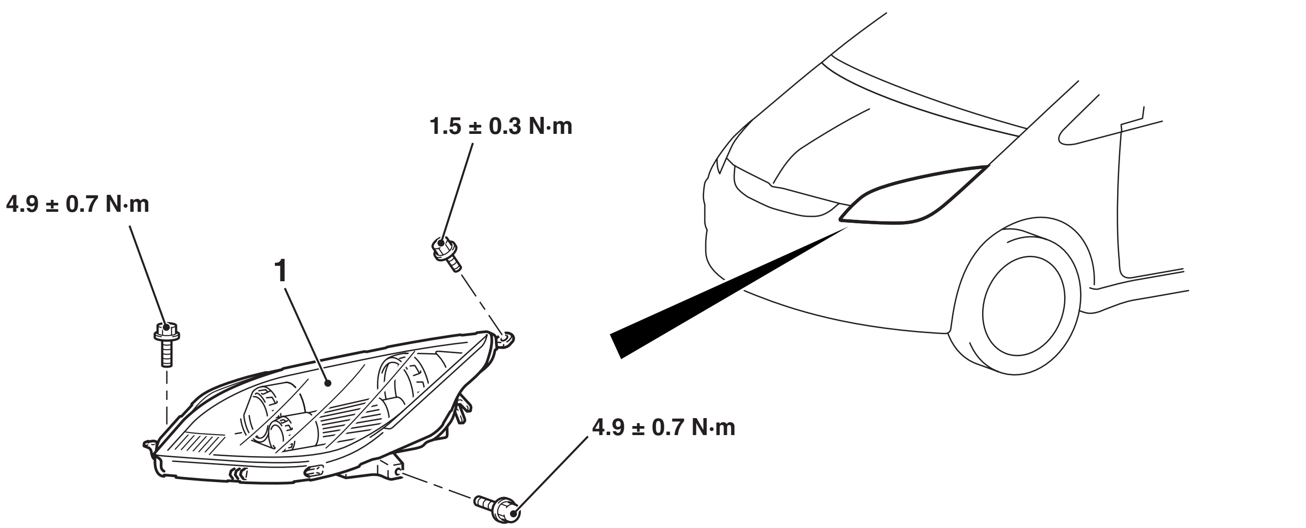
Don't touch the bulb surface with bare hands or dirty gloves. If the bulb surface (glass part) gets dirty, clean it with alcohol or thinner immediately and dry well, and then install it.



Disconnect the connector, and twist the front turn signal lamp socket to remove it.

REMOVAL AND INSTALLATION

M1542001800686



Removal step

- Front bumper assembly (Refer to GROUP 51, Front bumper assembly and radiator grille P.51-2)

1. Headlamp assembly

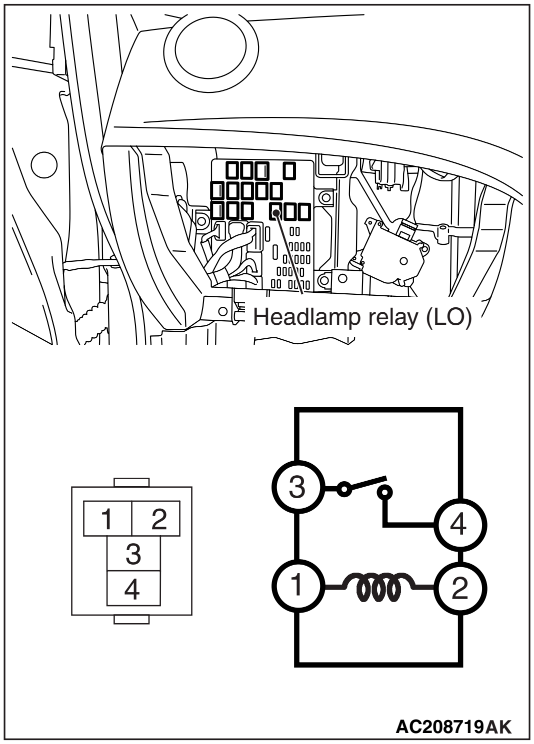
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INSPECTION

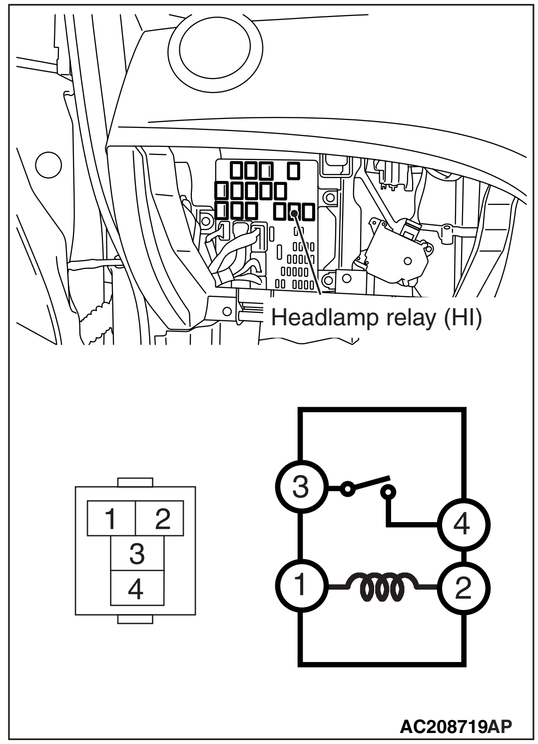
M1542011202733

HEADLAMP RELAY (LO) CHECK



Battery voltage	Tester connection	Specified condition
Not supplied	3 – 4	Open circuit
• Connect terminal 1 to the positive battery terminal • Connect terminal 2 to the negative battery terminal	3 – 4	Continuity exists (2 Ω or less)

HEADLAMP RELAY (HI) CHECK



Battery voltage	Tester connection	Specified condition
Not supplied	3 – 4	Open circuit
• Connect terminal 1 to the positive battery terminal • Connect terminal 2 to the negative battery terminal	3 – 4	Continuity exists (2 Ω or less)

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FOG LAMP

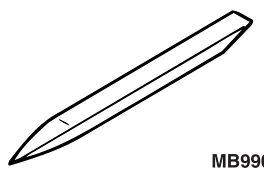
SERVICE SPECIFICATION

M1542000301034

Item		Standard value
Front fog lamp aiming	Vertical direction	60 mm (1.15°) below horizontal (H)

SPECIAL TOOL

M1542000602470

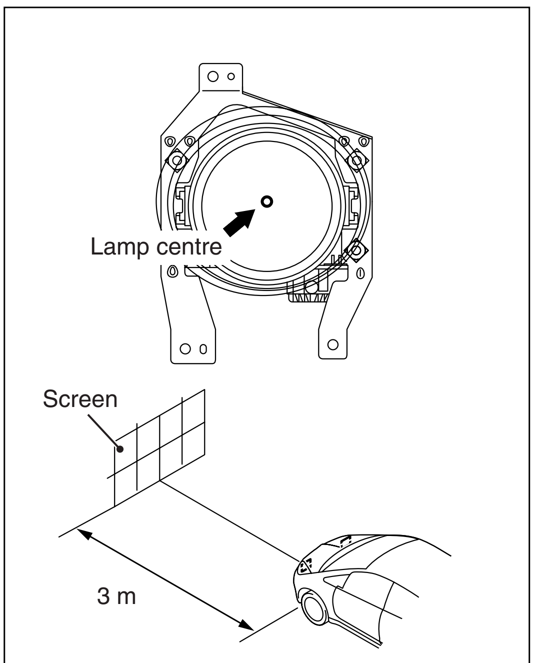
Tool	Number	Name	Use
 MB990784	MB990784	Ornament remover	Removal of fog lamp switch panel and front fog lamp bezel

ON-VEHICLE SERVICE

FOG LAMP AIMING

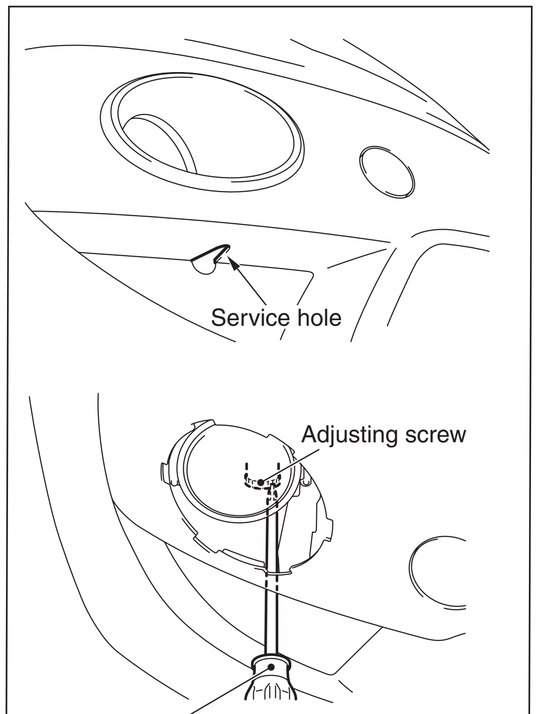
M1542001100922

<EXCEPT FOR RALLIART VERSION-R>



AC402040AD

1. Measure the centre of the front fog lamps, as shown in the illustration.
2. Set the distance between the screen and the centre of the front fog lamps as shown in the illustration.
3. Inflate the types to the specified pressures and there should be no other load in the vehicles other than driver or substituted weight of approximately 75 kg placed in the driver's position.
4. With the engine running at 2,000 r/min, aim the front fog lamp.

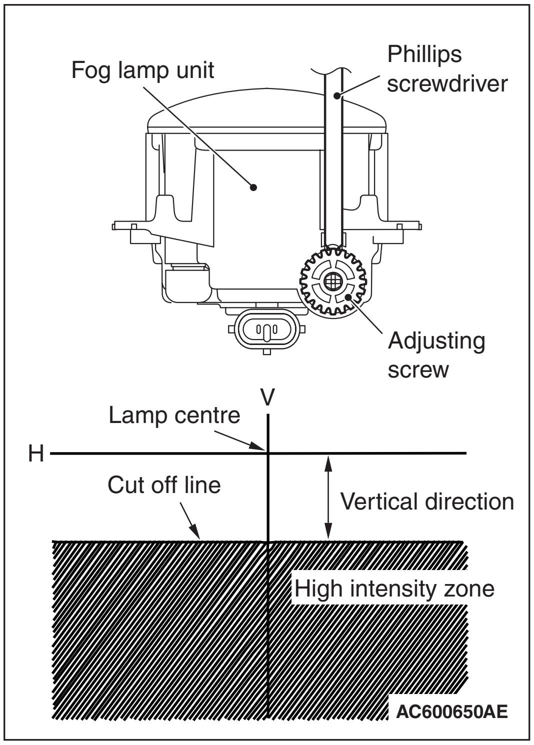


AC405218AB

5. Insert a Phillips screwdriver into the service hole and place it on the adjusting screw.

   NOTE: If the adjusting screw cannot be seen from the service hole, remove the fog lamp bezel so that it will be easier to see the position of the adjusting screw.

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Group TOC



6. Adjust the cut off line (boundary between light and dark) position to the standard value with the adjusting screw.

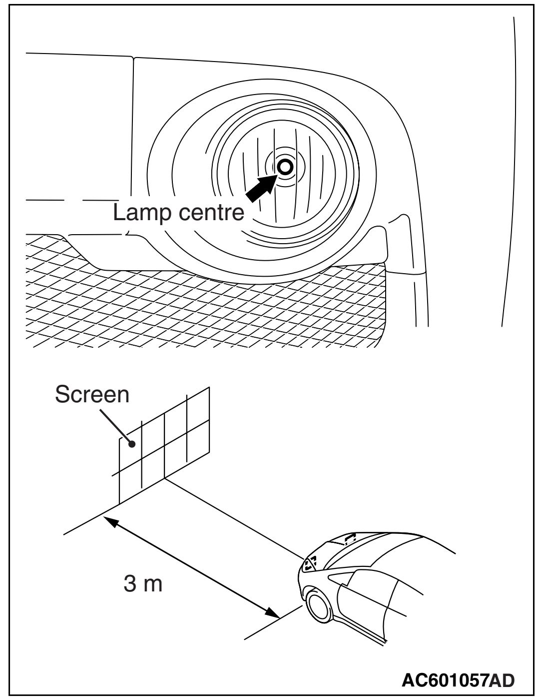
   Standard value:
   (Vertical direction) 60 mm (1.15°) below horizontal (H)

⚠ CAUTION

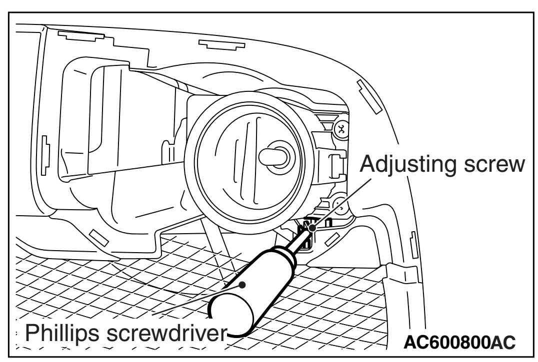
When marking the aiming adjustment, be sure to mask those lamps which are not being adjusted.

NOTE: The horizontal direction is non-adjustable. If the deviation of the light beam axis exceeds the standard value, check to be sure that the mounting location or some other point is not defective.

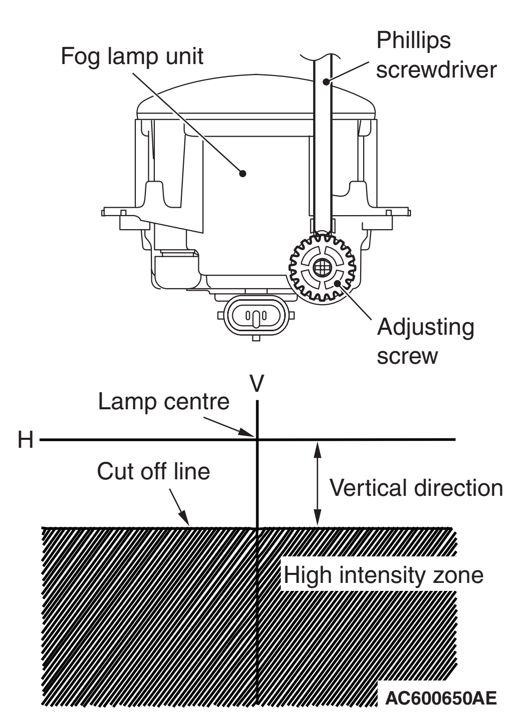
<RALLIART VERSION-R>



1. Measure the centre of the front fog lamps, as shown in the illustration.
2. Remove the front fog lamps bezel.
3. Set the distance between the screen and the centre of the front fog lamps as shown in the illustration.
4. Inflate the types to the specified pressures and there should be no other load in the vehicles other than driver or substituted weight of approximately 75 kg placed in the driver's position.
5. With the engine running at 2,000 r/min, aim the front fog lamp.



6. Insert a Phillips screwdriver into the service hole and place it on the adjusting screw.



AC600650AE

7. Adjust the cut off line (boundary between light and dark) position to the standard value with the adjusting screw.

   Standard value:
   (Vertical direction) 60 mm (1.15°) below horizontal (H)

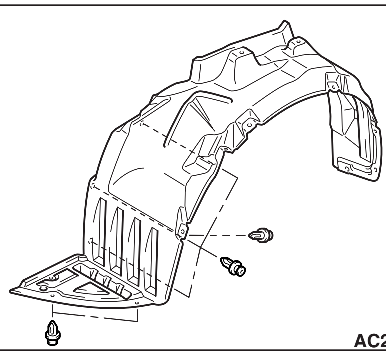
⚠ CAUTION
When marking the aiming adjustment, be sure to mask those lamps which are not being adjusted.

NOTE: The horizontal direction is non-adjustable. If the deviation of the light beam axis exceeds the standard value, check to be sure that the mounting location or some other point is not defective.

BULB REPLACEMENT

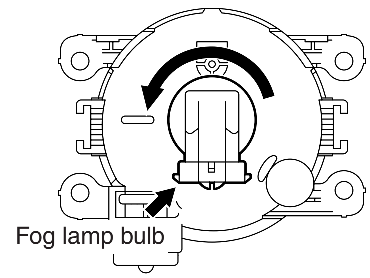
M1542001301639

<EXCEPT FOR RALLIART VERSION-R>


AC209035

1. Remove the splash shield assembling bolts and clips as shown.

⚠ CAUTION
Don't touch the bulb surface with bare hands or dirty gloves. If the bulb surface (glass part) gets dirty, clean it with alcohol or thinner immediately and dry well, and then install it.



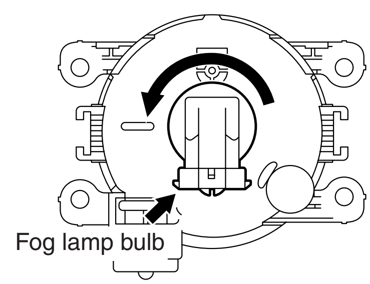
AC403172AC

2. Disconnect the connector and withdraw the bulb.
3. Replace the valve, and connect securely the connector.

<RALLIART VERSION-R>

1. Remove the front fog lamp bezel.
2. Remove the front fog lamp assembly.

⚠ CAUTION
Don't touch the bulb surface with bare hands or dirty gloves. If the bulb surface (glass part) gets dirty, clean it with alcohol or thinner immediately and dry well, and then install it.



AC403172AC

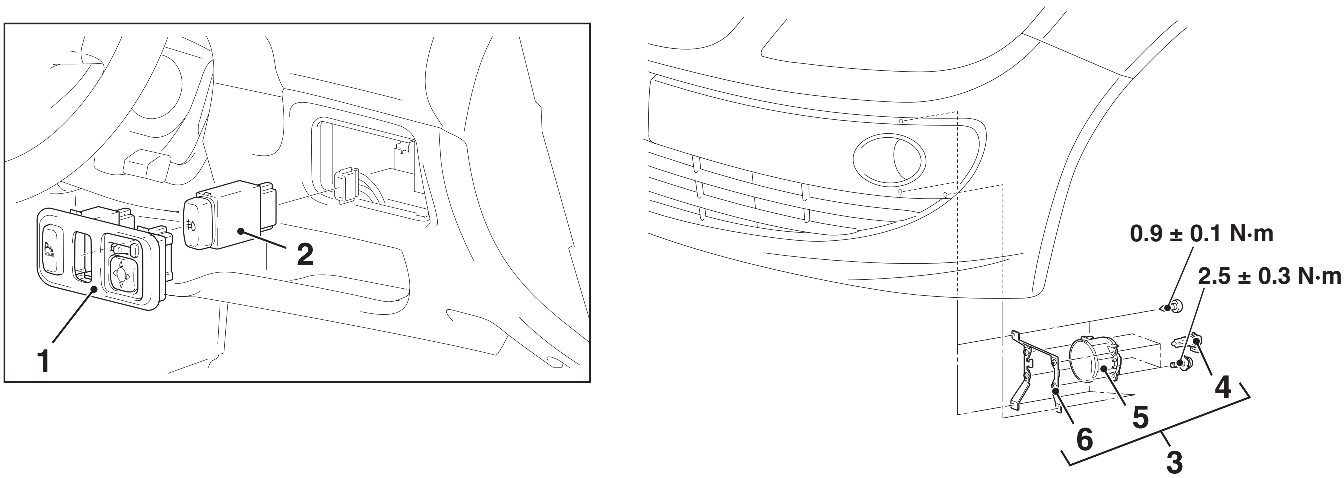
3. Disconnect the connector and withdraw the bulb.
4. Replace the valve, and connect securely the connector.

FOG LAMP

REMOVAL AND INSTALLATION

M1542001500986

<EXCEPT FOR RALLIART VERSION-R>



AC601155AB

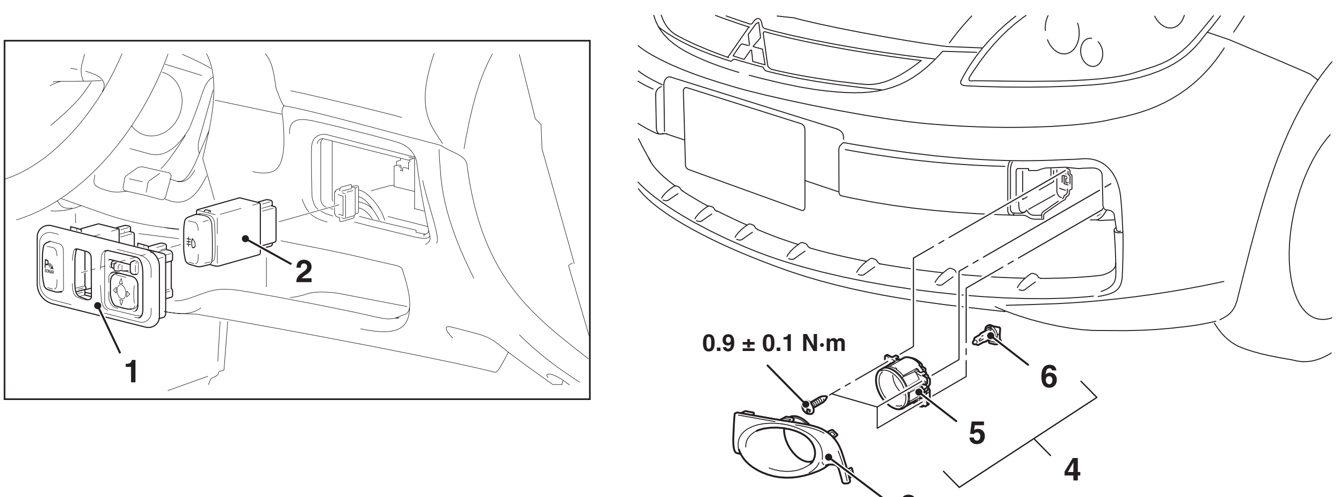
Fog lamp switch removal steps

1. Switch panel
2. Fog lamp switch

Fog lamp removal steps

<<A>> 3. Fog lamp assembly
4. Bulb
5. Fog lamp unit
6. Fog lamp bracket

<RALLIART VERSION-R>



AC601156AB

Fog lamp switch removal steps

1. Switch panel
2. Fog lamp switch

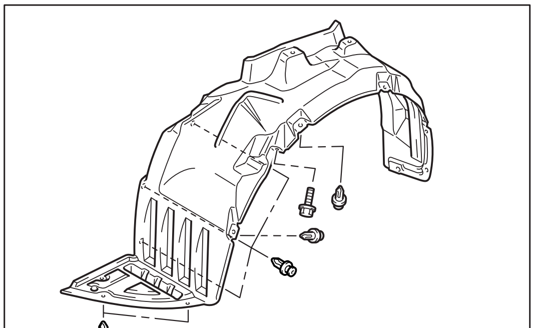
Fog lamp removal steps

3. Front fog lamp bezel
4. Front fog lamp assembly
5. Fog lamp unit
6. Bulb

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REMOVAL SERVICE POINT

<<A>>FOG LAMP ASSEMBLY REMOVAL <EXCEPT FOR RALLIART VERSION-R>



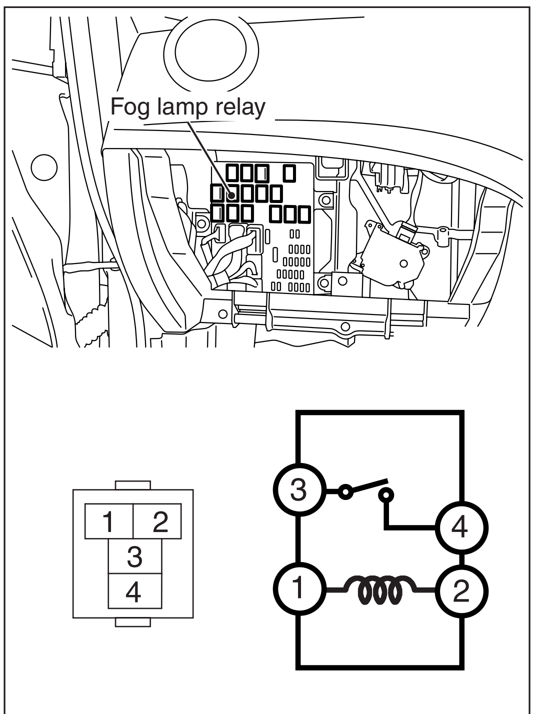
AC206649

Remove the splash shield assembling bolts and clips as shown.

INSPECTION

M1542011202744

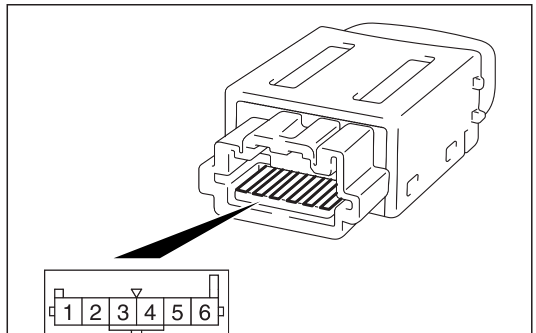
FOG LAMP RELAY CONTINUITY CHECK



AC208719AM

Battery voltage	Tester connection	Specified condition
Not supplied	3 – 4	Open circuit
• Connect terminal 1 to the positive battery terminal • Connect terminal 2 to the negative battery terminal	3 – 4	Continuity exists (2 Ω or less)

FOG LAMP SWITCH CONTINUITY CHECK



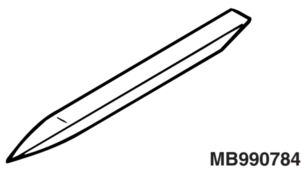
AC206402AB

Switch position	Terminal number	Normal conditions
OFF	1 – 2	Open circuit
ON	1 – 2	Continuity exists (2 Ω or less)

SIDE TURN-SIGNAL LAMP

SPECIAL TOOL

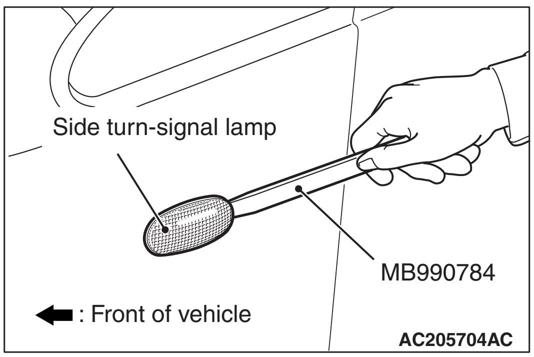
M1542000601433

Tool	Number	Name	Use
	MB990784	Ornament remover	Removal of side turn-signal lamp

REMOVAL AND INSTALLATION

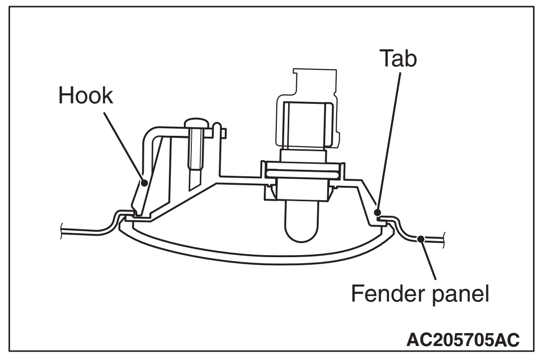
M1542012000156

REMOVAL SERVICE POINT



Use an appropriate tool such as MB990874 to pry out the tab from the fender, and remove the side turn signal lamp.

INSTALLATION SERVICE POINT



Insert pawls into fender panel and install side turn-signal lamp.

ROOM LAMP

ON-VEHICLE SERVICE

M1542000800605

HOW TO ADJUST THE ROOM LAMP DELAY-OFF TIME

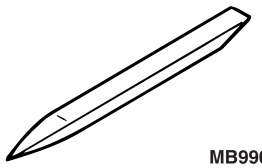
The room lamp delay-off time can be adjusted by the smart wiring system (SWS). (Refer to GROUP 54C, On-vehicle service P.54C-240.)

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REAR COMBINATION LAMP

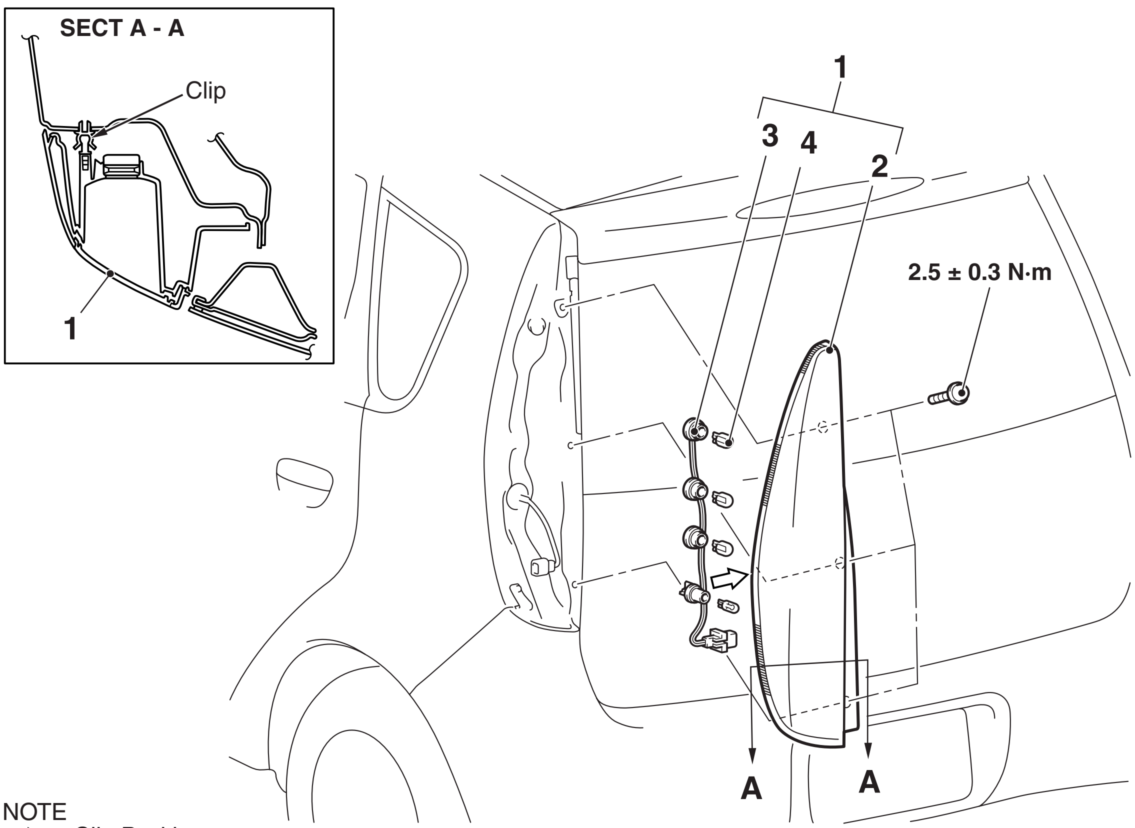
SPECIAL TOOL

M1542000601444

Tool	Number	Name	Use
	MB990784	Ornament remover	Removal of rear combination lamp assembly

REMOVAL AND INSTALLATION

M1542003900935



NOTE
⇨ : Clip Position

AC509608AB

Removal steps

- Rear combination lamp connector
1. Rear combination lamp assembly

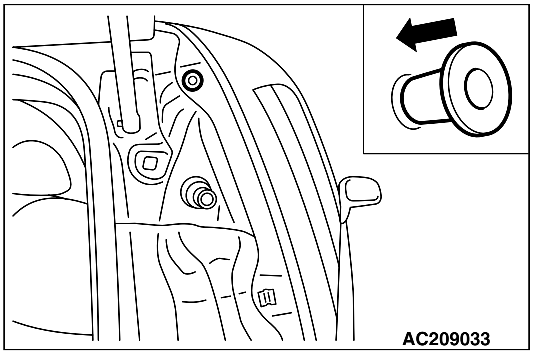
Removal steps (Continued)

>>A<< 2. Rear combination lamp
3. Socket assembly
4. Bulb

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INSTALLATION SERVICE POINT

>>A<< REAR COMBINATION LAMP INSTALLATION



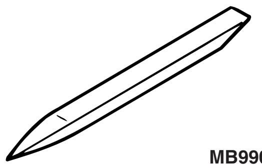
Install the cover to the vehicle body, and then install the rear combination lamp assembly.

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HIGH-MOUNTED STOP LAMP

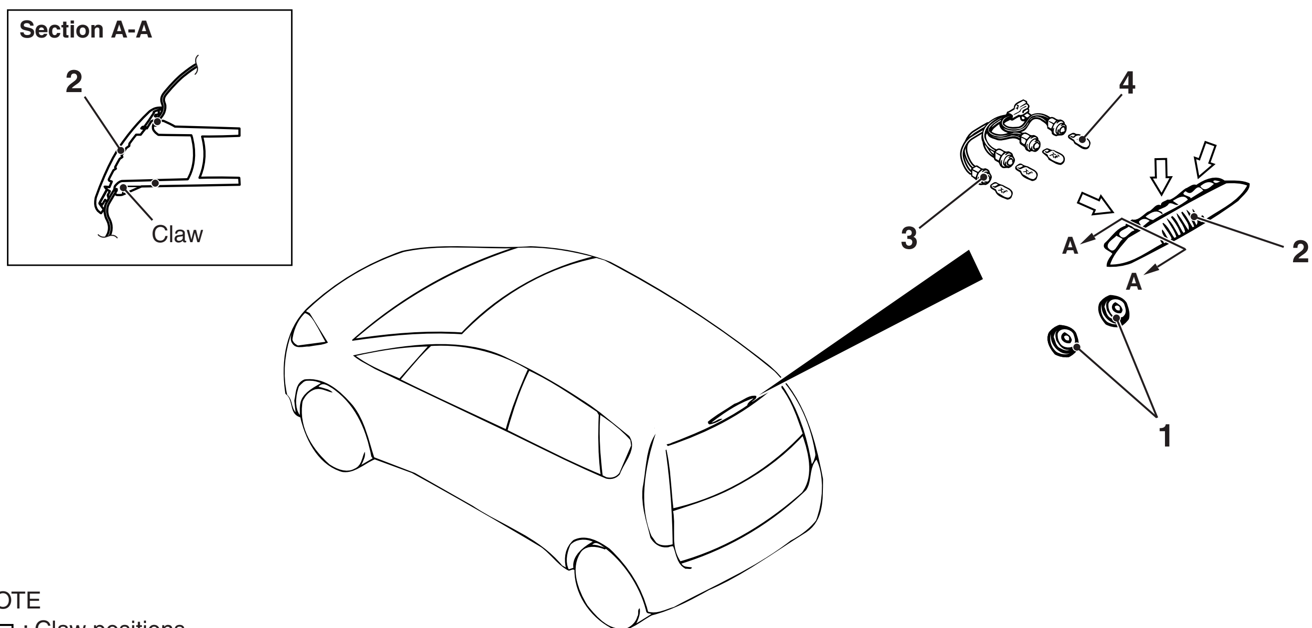
SPECIAL TOOL

M1542000601455

Tool	Number	Name	Use
 MB990784	MB990784	Ornament remover	Removal of high-mounted stop lamp assembly

REMOVAL AND INSTALLATION

M1542005100786



AC510217AB

Removal steps

1. Grommet

<<A>> 2. High-mounted stop lamp

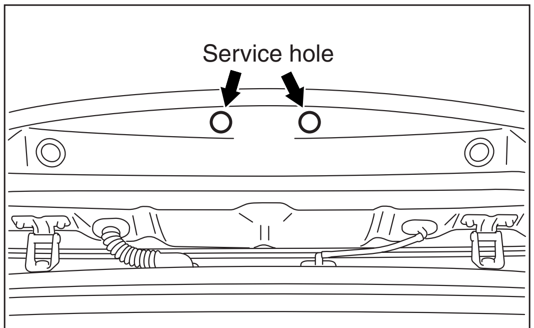
Removal steps (Continued)

3. Socket assembly
4. Bulb

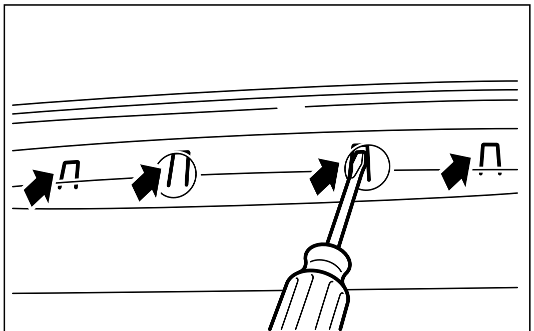
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REMOVAL SERVICE POINT

<<A>> HIGH-MOUNTED STOP LAMP REMOVAL



AC208975AC



AC209034

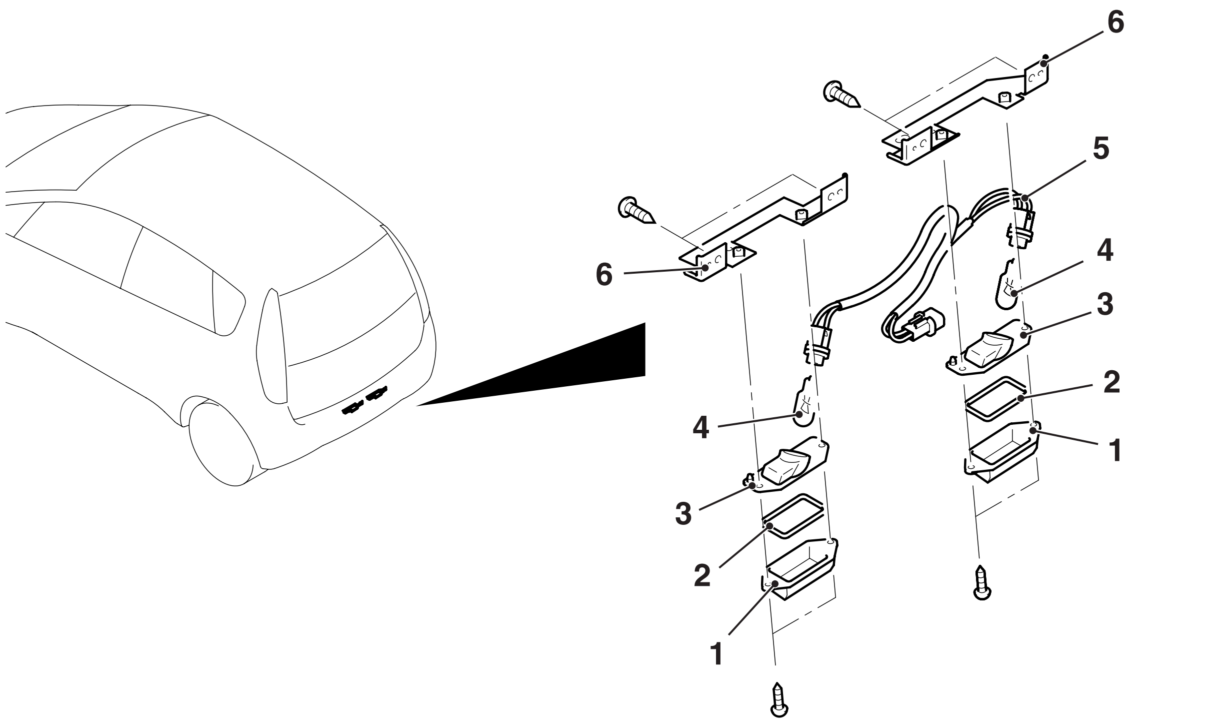
Use the following steps to easily route high-mounted stop light harness in the event of installation:
Insert a flat-tipped screwdriver through the service hole as shown to disengage the claw to remove the high-mounted stop lamp.

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LICENCE PLATE LAMP

REMOVAL AND INSTALLATION

M1542004200337



Removal steps

1. Licence plate lamp lens
2. Packing
3. Licence plate lamp body
4. Bulb

Removal steps (Continued)

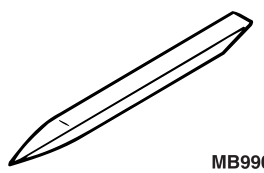
5. Harness
- Rear bumper assembly (GROUP 51, Rear bumper assembly P.51-7.)
6. Bracket

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HAZARD WARNING LAMP SWITCH

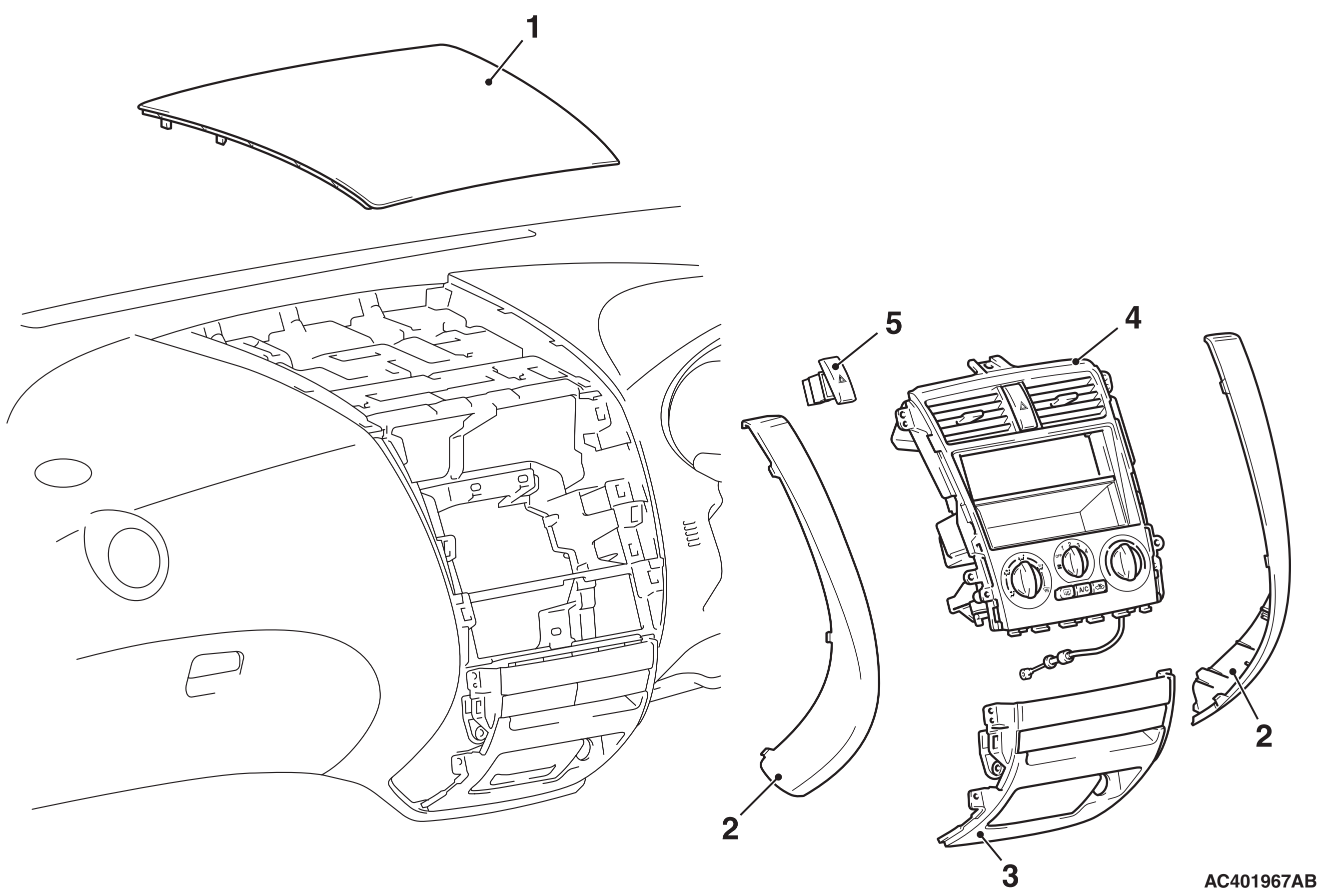
SPECIAL TOOL

M1542000601466

Tool	Number	Name	Use
	MB990784	Ornament remover	Removal of upper centre panel, console panel, lower centre panel and centre panel assembly

REMOVAL AND INSTALLATION

M1542006600643



Removal steps

1. Upper centre panel (Refer to GROUP 52A, Instrument panel assembly P.52A-3.)
2. Console panel (Refer to GROUP 52A, Instrument panel assembly P.52A-3.)

Removal steps (Continued)

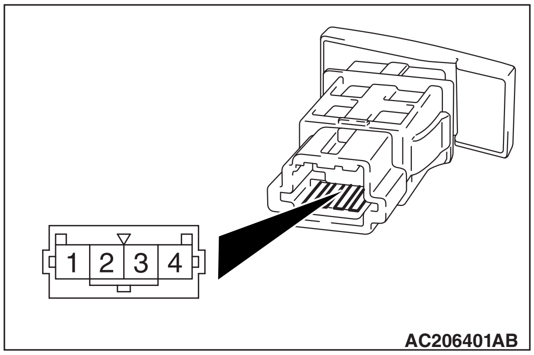
3. Lower centre panel (Refer to GROUP 52A, Instrument panel assembly P.52A-3.)
4. Heater control panel (Refer to GROUP 52A, Instrument panel assembly P.52A-3.)
5. Hazard warning lamp switch

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INSPECTION

M1542011202755

HAZARD WARNING LAMP SWITCH CONTINUITY CHECK



AC206401AB

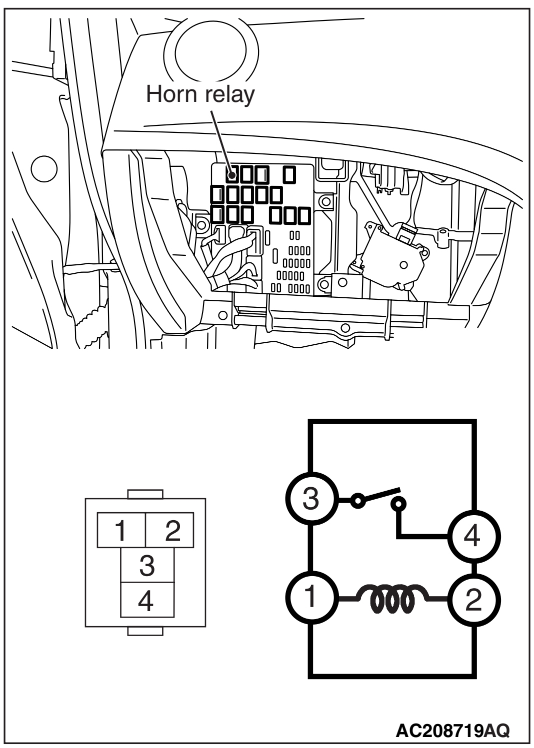
Switch position	Tester connection	Specified condition
Released	1 – 2	Open circuit
Pressed	1 – 2	Continuity exists (2 Ω or less)

HORN

INSPECTION

M1543019504599

HORN RELAY CONTINUITY CHECK



AC208719AQ

Battery voltage	Tester connection	Specified condition
Not applied	3 – 4	Open circuit
• Connect terminal 1 to the positive battery terminal • Connect terminal 2 to the negative battery terminal		Continuity exists (2 Ω or less)

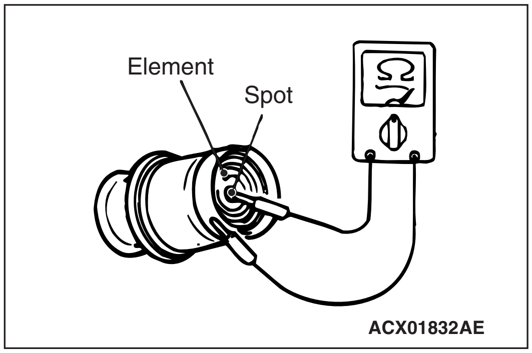
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CIGARETTE LIGHTER

INSPECTION

M1543019503187

CIGARETTE LIGHTER CHECK



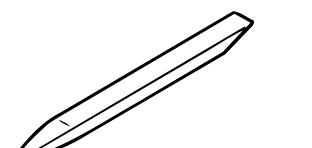
- Take out the plug, and check for a worn edge on the element spot connection, and for shreds of tobacco or other material on the element.
- Using an ohmmeter, check that the element resistance value is 1.7 ohms.

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COLUMN SWITCH

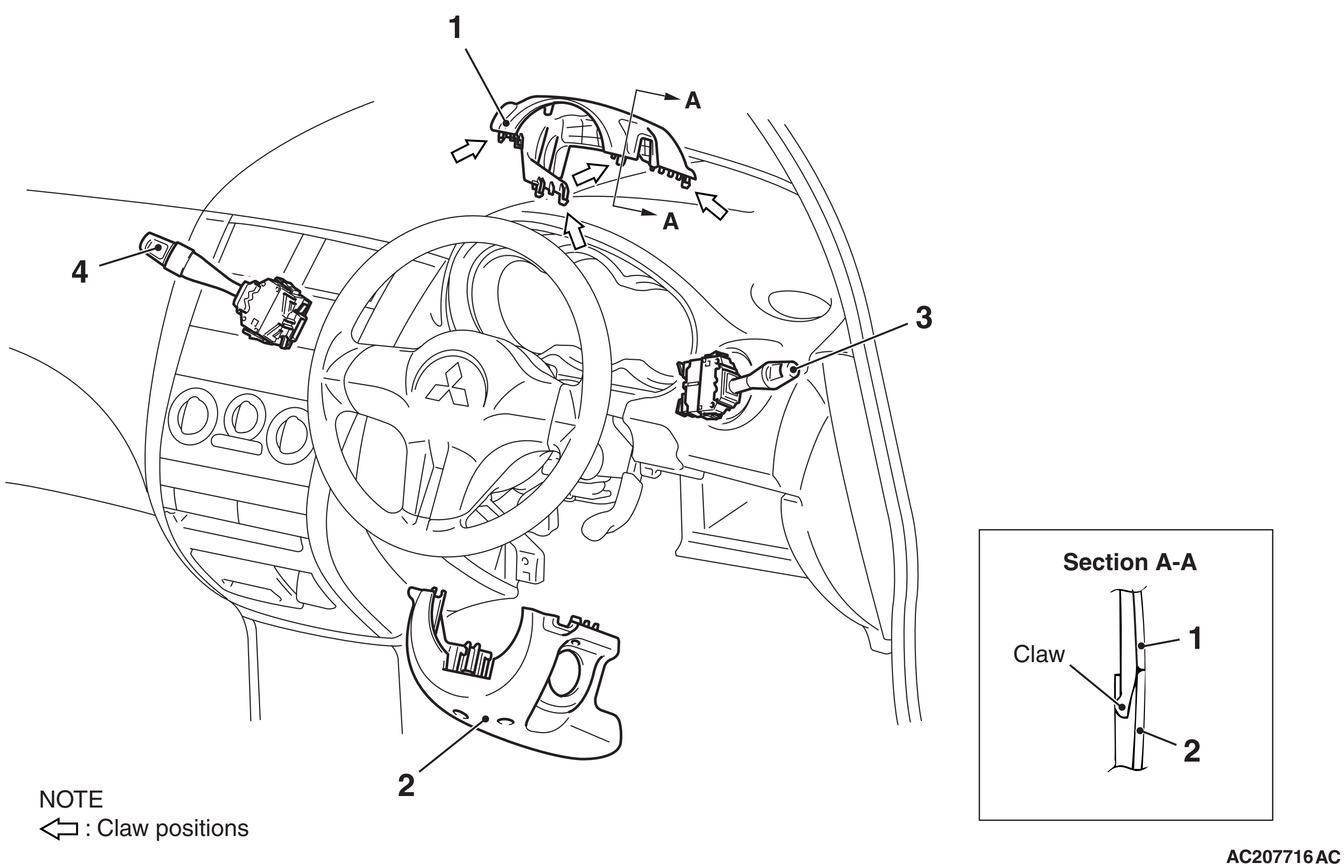
SPECIAL TOOL

M1543000602343

Tool	Number	Name	Application
 MB990784	MB990784	Ornament remover	Removal of column cover

REMOVAL AND INSTALLATION

M1543009100606



Removal steps

- Steering wheel (Refer to GROUP 37, Steering wheel P.37-90.)

1. Upper column cover
2. Lower column cover

Removal steps (Continued)

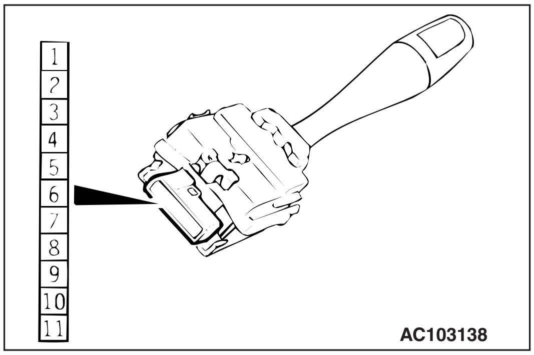
3. Lighting switch
4. Windshield wiper and washer switch

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INSPECTION

M1543019504607

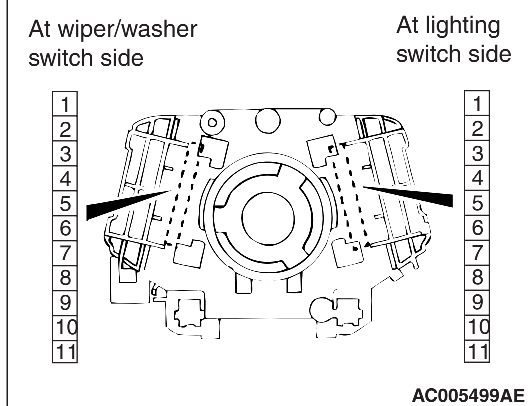
LIGHTING SWITCH CONTINUITY CHECK



Switch position	Tester connection	Specified condition
OFF	–	Open circuit
Automatic lighting switch	3 – 5	Continuity exists (2 Ω or less)
Headlamp switch	3 – 6	Continuity exists (2 Ω or less)
Tail lamp switch	3 – 7	Continuity exists (2 Ω or less)
Passing switch	3 – 8	Continuity exists (2 Ω or less)
Dimmer switch	3 – 9	Continuity exists (2 Ω or less)
Turn-signal lamp switch (RH)	3 – 10	Continuity exists (2 Ω or less)
Turn-signal lamp switch (LH)	3 – 11	Continuity exists (2 Ω or less)

COLUMN SWITCH (SWITCH BODY) CONTINUITY CHECK

1. Remove the lighting switch, wiper and washer switch.
2. Check that there is continuity of each same terminal number (from Nos. 3 to 11) between each connectors of column switch body left in the steering column.



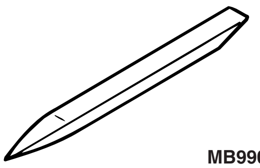
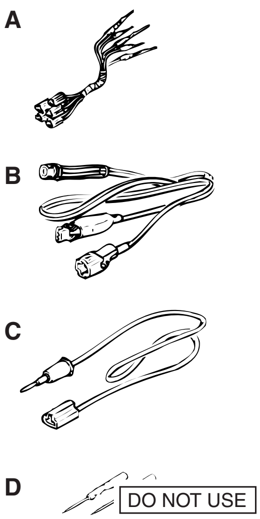
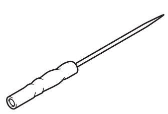
Column switch body	Tester connection	Specified condition
Lighting switch side connector Wiper and washer switch side connector	3 – 3 4 – 4 5 – 5 6 – 6 7 – 7 8 – 8 9 – 9 10 – 10 11 – 11	Continuity exists (2 Ω or less)

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RADIO AND CD PLAYER

SPECIAL TOOLS

M1542000602298

Tool	Number	Name	Application
 MB990784	MB990784	Ornament remover	Removal of upper centre panel, consol panel, lower centre panel, heater control panel
 MB991223AZ	MB991223 A: MB991219 B: MB991220 C: MB991221 D: MB991222	Harness set A: Test harness B: LED harness C: LED harness adapter D: Probe	For checking voltage (continuity and value) at harness and connectors A: For checking connector pin contact voltage B: For checking power supply circuits C: For checking power supply circuits D: For connection to commercially available tester
 MB992006	MB992006	Extra fine probe	Continuity check and voltage measurement at harness wire or connector

TROUBLESHOOTING

TROUBLESHOOTING

M1544000700176

Use these steps to plan your diagnostic strategy. Follow through with each step to ensure that you have exhausted all possible methods of finding an audio system fault.

1. Gather information from the customer.
2. Verify that the condition described by the customer exists.
3. Find the malfunction by following the Symptom Chart.
4. Verify that the malfunction is eliminated.

STANDARD FLOW OF DIAGNOSIS TROUBLESHOOTING

Refer to GROUP 00, How to Use Troubleshooting/Inspection Service Points P.00-5.

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TROUBLE SYMPTOM CHART

M1544004900558

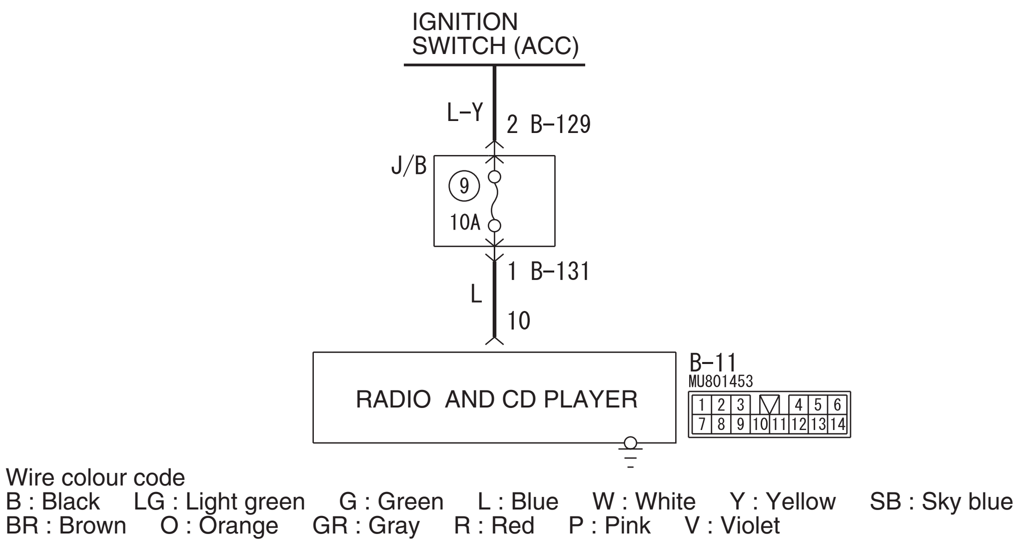
Symptom		Inspection Procedure No.	Reference Page
Power of radio and CD player does not turn ON when the ignition switch is in the "ACC" position or "ON" position.		1	P.54A-93
No sound from one speaker.		2	P.54A-95
Noise	Noise appears at certain places when travelling (AM).	3	P.54A-100
	Noise ispresent while moving (FM).	4	P.54A-101
	Mixed with noise, only at night (AM).	5	P.54A-102
	Broadcasts can be heard but both AM and FM have a lot of noise.	6	P.54A-102
	There is more noise on either AM or FM.	7	P.54A-103
	There is noise when starting the engine.	8	P.54A-104
	Some noise appears when there is vibration or shocks during travelling.	9	P.54A-105
	Noise sometimes appears on FM during travelling.	10	P.54A-106
	Ever-present noise.	11	P.54A-107
Radio	There is noise but no reception for both AM and FM or no sound from AM, or no sound from FM.	12	P.54A-107
	Poor reception.	13	P.54A-108
	Distortion on AM or on both AM and FM.	14	P.54A-109
	Distortion on FM only.	15	P.54A-109
	Using the auto select function, too few automatic stations are selected.	16	P.54A-110
	Preset stations are erased.	17	P.54A-111
CD player	CD can not be inserted.	18	P.54A-114
	No sound (CD only).	19	P.54A-114
	CD sound skips.	20	P.54A-115
	Sound quality is poor.	21	P.54A-115
	CD cannot be ejected.	22	P.54A-116

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SYMPTOM PROCEDURES

Inspection Procedure 1: Power of Radio and CD Player does not Turn ON when the Ignition Switch is in the "ACC" Position or "ON" Position.

Radio and CD Player Power Supply Circuit



W4N54L034A

COMMENTS ON TROUBLE SYMPTOM

The cause is probably a faulty radio and tape player or CD player power supply circuit system.

POSSIBLE CAUSES

- Damaged wiring harness or connector.
- Malfunction of radio and CD player.

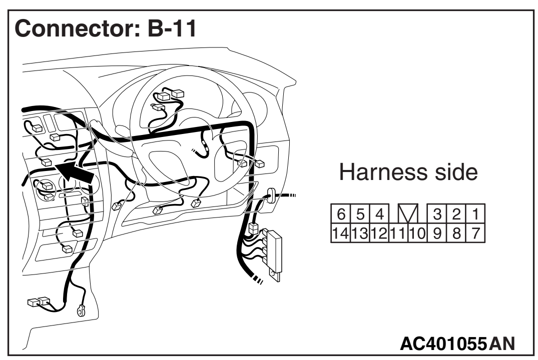
DIAGNOSIS PROCEDURE

Step 1. Check to see that the power turns ON when the power switch is turned ON.

(1) Turn the ignition switch to "ACC" position.
(2) Turn ON the radio and CD player power switch.

Q: Is it possible to put the radio and CD player power in the "ON" position?
YES : Go to Step 2.
NO : Go to Step 5.

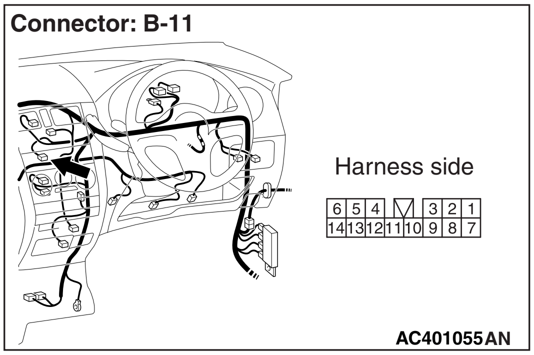
Step 2. Connector check: radio and CD player connector B-11.



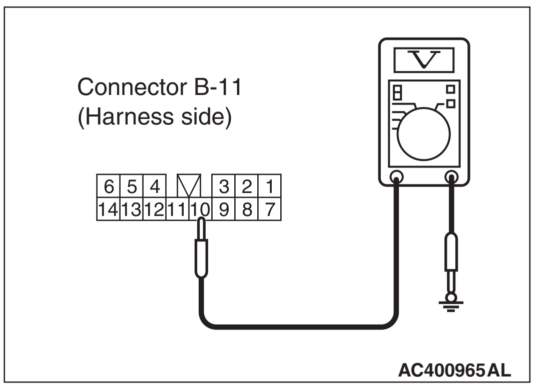
Q: Is radio and CD player connector B-11 in good condition?
YES : Go to Step 3.
NO : Repair or replace the component(s). If the power switch is turned on, the radio and tape player or CD player should operate normally.

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Group TOC

Step 3. Voltage measurement at radio and CD player connector B-11 in order to check the battery circuit of power supply system to the radio and CD player (ignition switch ACC).



(1) Disconnect radio and CD player connector B-11, and measure at the wiring harness side.
(2) Turn the ignition switch to "ACC" position.



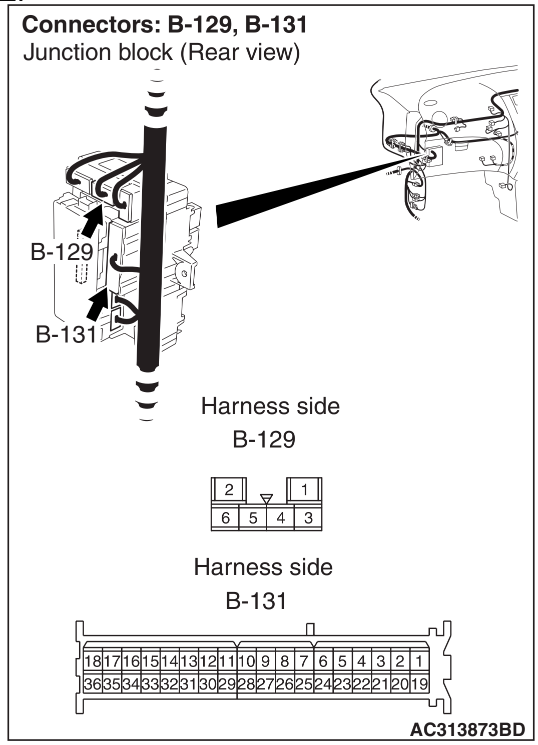
(3) Measure the voltage between terminal 10 and earth.

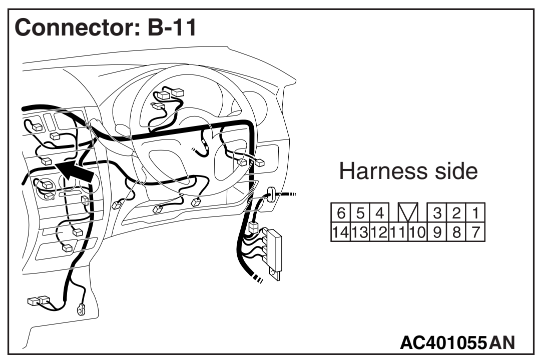
OK: Battery positive voltage

Q: Is the check result normal?
YES : Go to Step 5.
NO : Go to Step 4.

Step 4. Check the wiring harness between radio and CD player connector B-11 (terminal 10) and ignition switch (ACC).

NOTE:





Prior to the wiring harness inspection, check junction block connectors B-129 and B-131, and repair if necessary.

Q: Are the wiring harnesses between radio and CD player connector B-11 (terminal 10) and ignition switch (ACC) in good condition?
YES : Go to Step 5.
NO : Repair or replace the damage component(s). If the power switch is turned on, the radio and CD player should operate normally.

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Step 5. Check the assembling state of the radio and CD player.

NOTE: The radio and CD player is earthed to the instrument panel centre reinforcement directly.

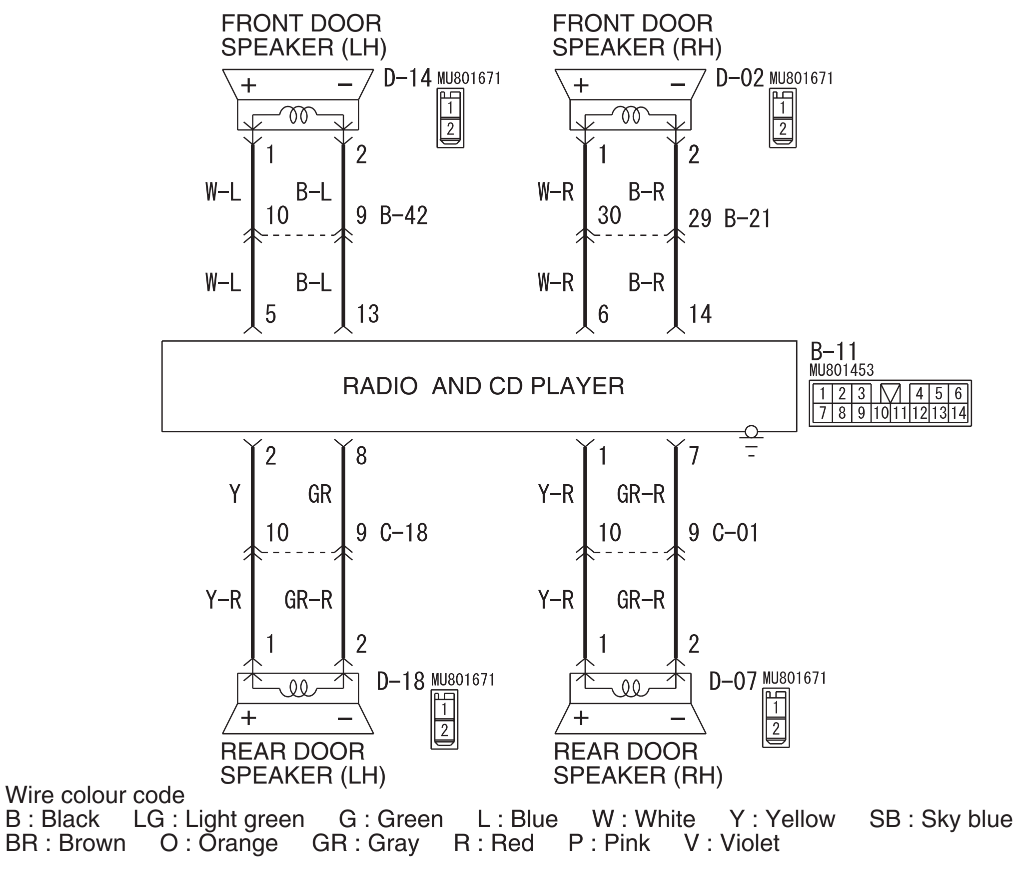
Q: Is the radio and CD player installed correctly?

YES : Repair or replace the radio and CD player. If the power switch is turned on, the radio and CD player should operate normally.

NO : Install properly. If the power switch is turned on, the radio and CD player should operate normally.

Inspection Procedure 2: No Sound from One Speaker.

Speaker System Circuit



COMMENTS ON TROUBLE SYMPTOM

The cause is probably a faulty speaker circuit system.

POSSIBLE CAUSES

- Malfunction of speaker.
- Damaged wiring harness or connector.
- Malfunction of radio and CD player.

DIAGNOSIS PROCEDURE

Step 1. Check to see which speaker the sound is not sent from.

Use the speaker test to determine which speaker does not sound.

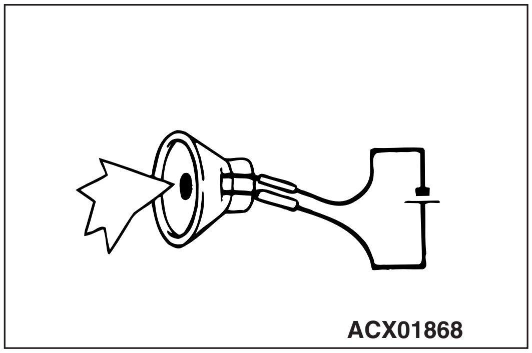
Q: Which speaker is not working?

Front door speaker (LH) : Go to Step 2.
Front door speaker (RH) : Go to Step 5.
Rear door speaker (LH) : Go to Step 8.
Rear door speaker (RH) : Go to Step 11.

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Step 2. Check the front door speaker (LH).

(1) Remove the front door speaker (LH). Refer to P.54A-120.



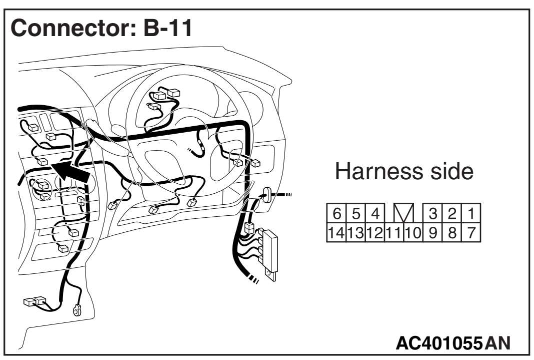
(2) Check that the front door speaker (LH) generates noise when a five-volt voltage is applied on the front door speaker (LH) terminal.

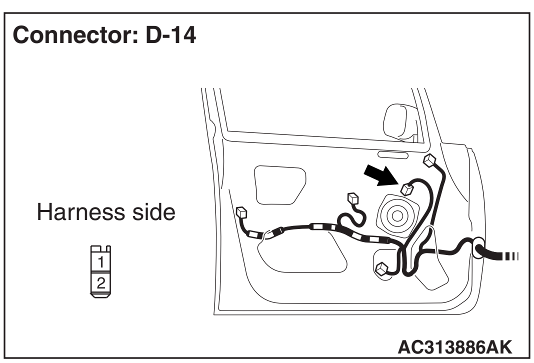
Q: Is the front door speaker (LH) generating noise?

YES : Go to Step 3.

NO : Replace the front door speaker (LH). The front door speaker (LH) should sound.

Step 3. Connector check: Front door speaker (LH) connector D-14 and radio and CD player connector B-11.



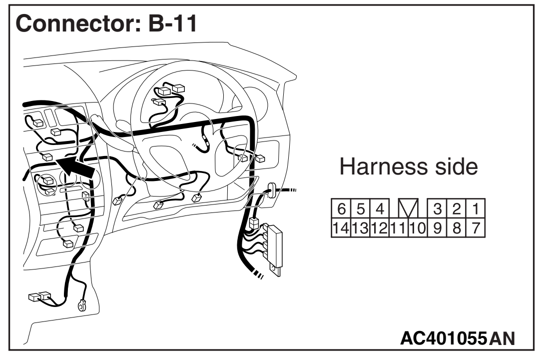


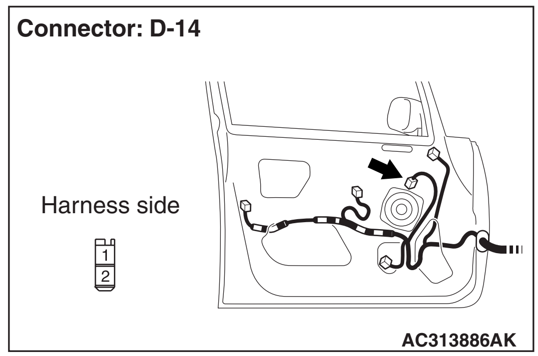
Q: Are harness connectors D-14 and B-11 in good condition?

YES : Go to Step 4.

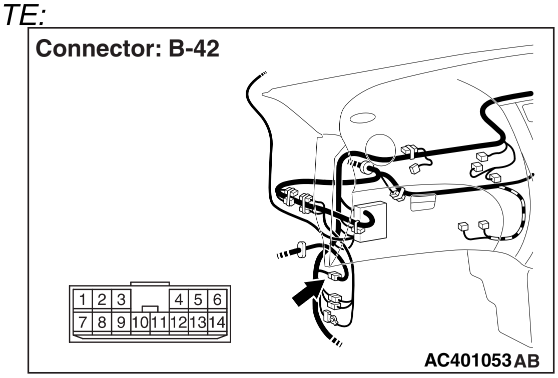
NO : Repair or replace the damage component(s). The front door speaker (LH) should sound.

Step 4. Check the wiring harness between front door speaker (LH) connector D-14 (terminal 1 and 2) and radio and tape player or CD player connector B-11 (terminals 5 and 13).





NOTE:



Prior to the wiring harness inspection, check intermediate connectors B-42, and repair if necessary.

Q: Is the wiring harness between front door speaker (LH) connector D-14 (terminal 1 and 2) and radio and CD player connector B-11 (terminal 5 and 13) in good condition?

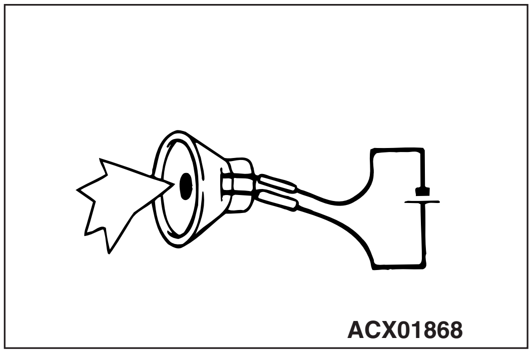
YES : Repair or replace the radio and CD player. The front door speaker (LH) should sound.

NO : Repair or replace the damage component(s). The front door speaker (LH) should sound.

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Step 5. Check the front door speaker (RH).

(1) Remove the front door speaker (RH). Refer to P.54A-120.



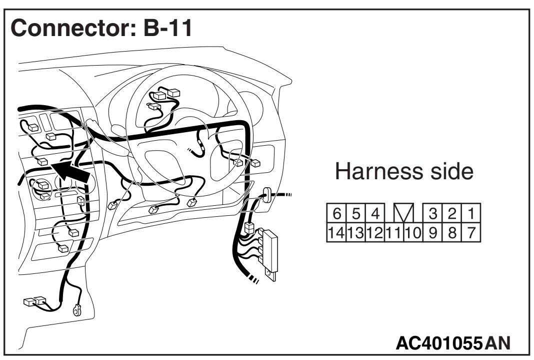
(2) Check that the front door speaker (RH) generates noise when a five-volt voltage is applied on the front door speaker (RH) terminal.

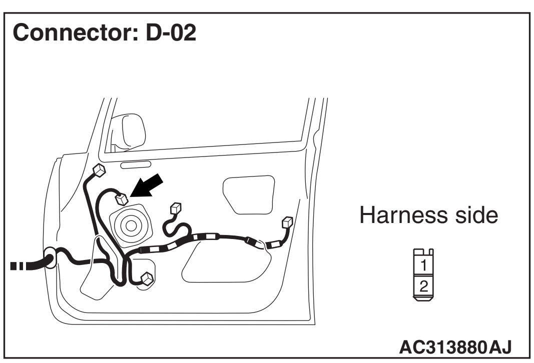
Q: Is the front door speaker (RH) generating noise?

YES : Go to Step 6.

NO : Replace the front door speaker (RH). The front door speaker (RH) should sound.

Step 6. Connector check: Front door speaker (RH) connector D-02 and radio and tape player or CD player connector B-11.



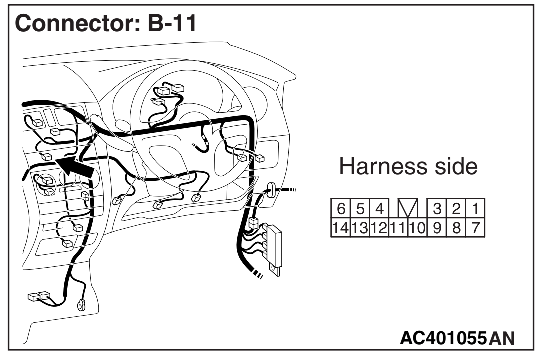


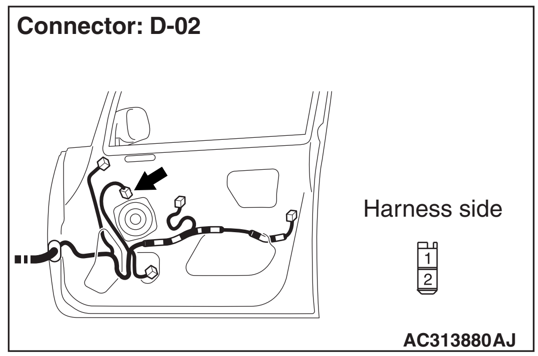
Q: Are harness connectors D-02 and B-11 in good condition?

YES : Go to Step 7.

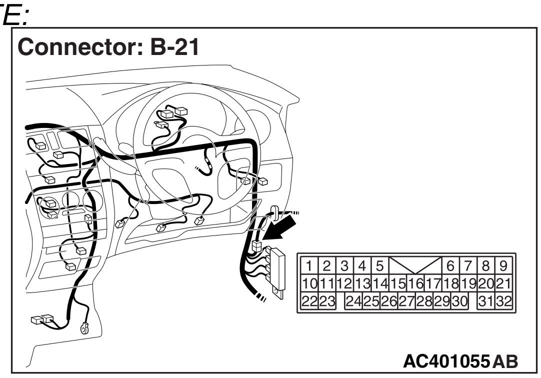
NO : Repair or replace the damage component(s). The front door speaker (RH) should sound.

Step 7. Check the wiring harness between front door speaker (RH) connector D-02 (terminal 1 and 2) and radio and CD player connector B-11 (terminal 6 and 14).





NOTE:



Prior to the wiring harness inspection, check intermediate connector B-21, and repair if necessary.

Q: Is the wiring harness between front door speaker (RH) connector D-02 (terminal 1 and 2) and radio and CD player connector B-11 (terminal 6 and 14) in good condition?

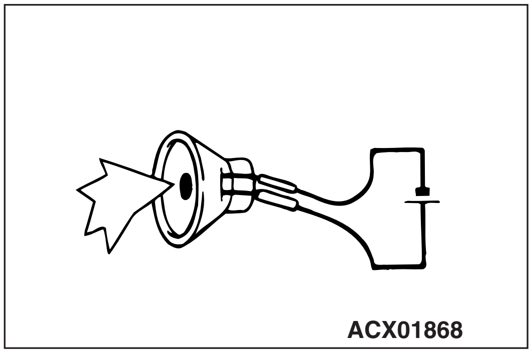
YES : Repair or replace the radio and CD player. The front door speaker (RH) should sound.

NO : Repair the wiring harness. The front door speaker (RH) should sound.

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Step 8. Check the rear door speaker (LH).

(1) Remove the rear door speaker (LH). Refer to P.54A-120.



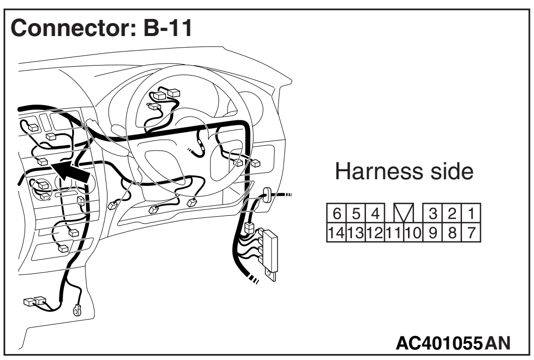
(2) Check that the rear door speaker (LH) generates noise when a five-volt voltage is applied on the rear door speaker (LH) terminal.

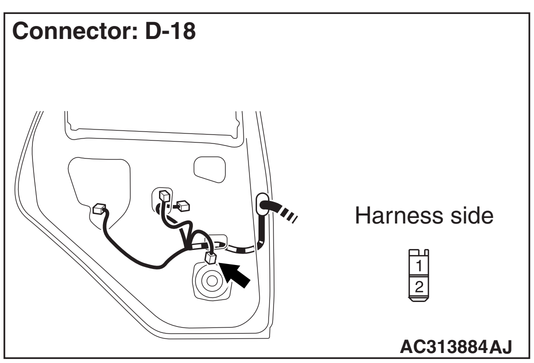
Q: Is the rear door speaker (LH) generating noise?

YES : Go to Step 9.

NO : Replace the rear door speaker (LH). The rear door speaker (LH) should sound.

Step 9. Connector check: Rear door speaker (LH) connector D-18 and radio and CD player connector B-11.



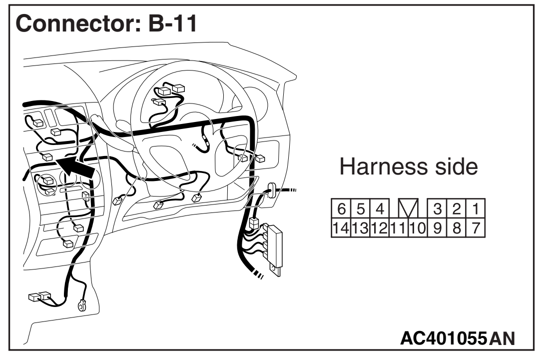


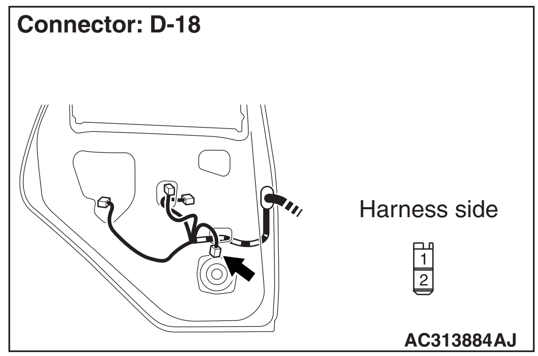
Q: Are harness connectors D-18 and B-11 in good condition?

YES : Go to Step 10.

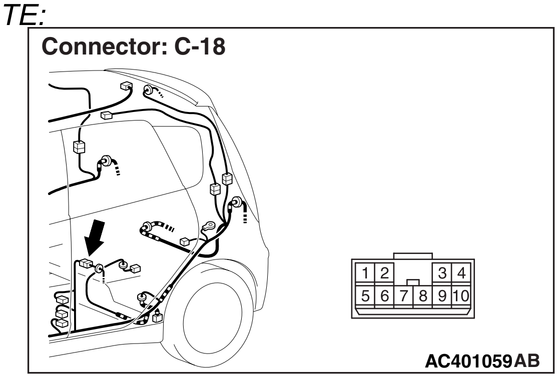
NO : Repair or replace the damage component(s). The rear door speaker (LH) should sound.

Step 10. Check the wiring harness between rear door speaker (LH) connector D-18 (terminal 1 and 2) and radio and CD player connector B-11 (terminal 2 and 8).





NOTE:



Prior to the wiring harness inspection, check intermediate connector C-18, and repair if necessary.

Q: Is the wiring harness between rear door speaker (LH) connector D-18 (terminal 1 and 2) and radio and CD player connector B-11 (terminal 2 and 8) in good condition?

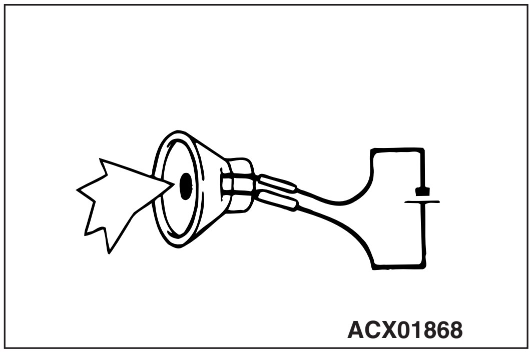
YES : Repair or replace the radio and tape player or CD player. The rear door speaker (LH) should sound.

NO : Repair or replace the damage component(s). The rear door speaker (LH) should sound.

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Step 11. Check the rear door speaker (RH).

(1) Remove the rear door speaker (RH). Refer to P.54A-120.



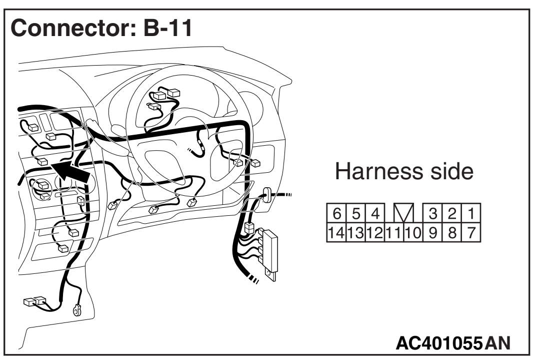
(2) Check that the rear door speaker (RH) generates noise when a five-volt voltage is applied on the rear door speaker (RH) terminal.

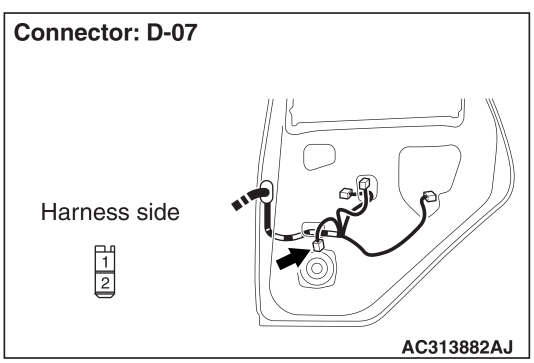
Q: Is the rear door speaker (RH) generating noise?

YES : Go to Step 12.

NO : Replace the rear door speaker (RH). The rear door speaker (RH) should sound.

Step 12. Connector check: Rear door speaker (RH) connector D-07 and radio and CD player connector B-11.



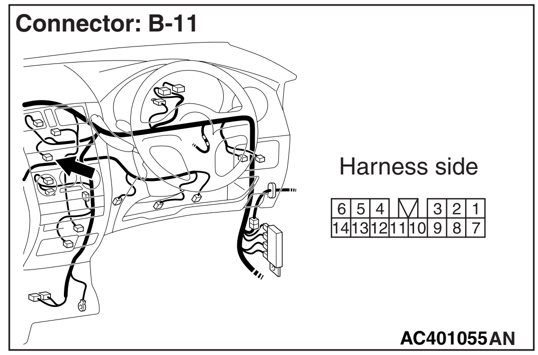


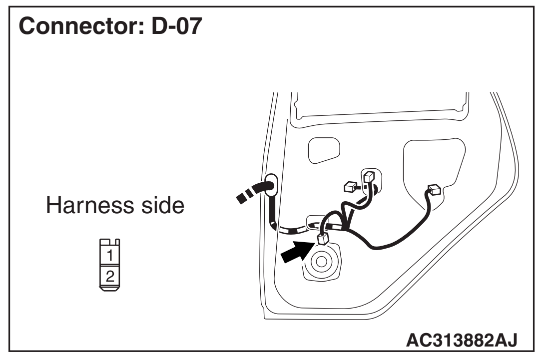
Q: Are harness connectors D-07 and B-11 in good condition?

YES : Go to Step 13.

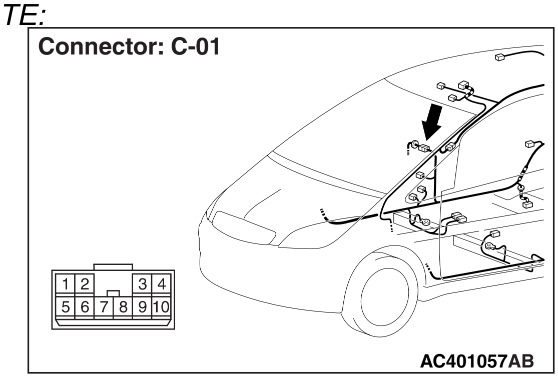
NO : Repair or replace the damage component(s). The rear door speaker (RH) should sound.

Step 13. Check the wiring harness between rear door speaker (RH) connector D-07 (terminals 1 and 2) and radio and CD player connector B-11 (terminals 1 and 7).





NOTE:



Prior to the wiring harness inspection, check intermediate connector C-01, and repair if necessary.

Q: Is the wiring harness between rear door speaker (RH) connector D-07 (terminal 1 and 2) and radio and CD player connector B-11 (terminal 1 and 7) in good condition?

YES : Repair or replace the radio and CD player. The rear door speaker (RH) should sound.

NO : Repair or replace the damage component(s). The rear door speaker (RH) should sound.

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INSPECTION PROCEDURE 3: Noise Appears at Certain Places when Travelling (AM).

DIAGNOSIS PROCEDURE

Step 1. Check the noise occur when entering or near a particular structure (building, tunnel, mountain, etc).

Q: Does the noise occur when entering or near a particular structure (building, tunnel, mountain, etc).?
YES : Go to Step 3.
NO : Go to Step 2.

Step 2. After taking the following measures to prevent the noise, check that no noise appears.
(1) Change to a different station with a stronger wave to boost resistance to interference.
(2) Suppress high tones to reduce noise.
(3) Extend antenna completely.

Q: Do the following measures eliminate the noise?
YES : The following causes can be considered.
NO : Go to Step 4.

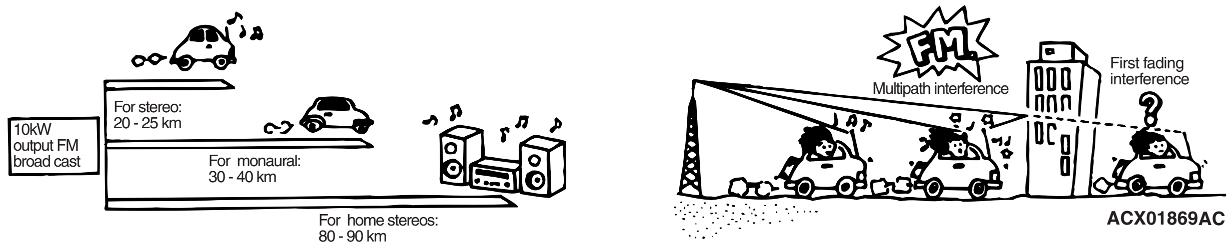
Step 3. Ask the owner about the state of the noise.
(1) Find out the following information from the owner.
(2) Place where the noise occurs.
(3) Locality conditions (valley, mountain, etc).
(4) Name and frequency of stations affected by noise

Q: Which is the noise, vehicle noise or external noise?
Vehicle noise : It may not be possible to prevent noise if the signal is weak.
External noise : In almost all cases, prevention on the receiver side is impossible. Weak signals especially are susceptible to interference. Go to Step 4.

Step 4. Check that there is no noise.

Q: Does noise still exist?
YES : If there is more noise than on radios in other vehicles, find out the noise condition and the name and frequency of the receiving stations from the owner, and consult with the radio manufacturer's service centre.
NO : Normal.

INSPECTION PROCEDURE 4: Noise is Present while Moving (FM).



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DIAGNOSIS PROCEDURE

NOTE: FM waves have the same properties as lamp, and can be deflected and blocked. FM signal reception is severely degraded in the shadow of obstructions such as buildings or mountains. An FM receiver will then only receive a reflected signal.

1. The signal becomes weak as the distance from the station's transmission antenna increases. The signal strength received depends on the signal strength of the transmitting station and intervening obstructions such as buildings and hills. Generally speaking, the area of good reception is approximately 20 – 25 km for stereo reception, and 30 – 40 km for monaural reception.
2. The signal will becomes weak when an area of shadow from the transmitting antenna (places where there are obstructions such as mountains or buildings between the station transmitter and the vehicle), and noise will appear. <This is called first fading, and gives a steady buzzing noise.>
3. If a direct signal hits the antenna at the same time as a signal reflected by obstructions such as mountains or buildings, interference of the two signals will generate noise. When moving, noise will appear each time the vehicle's antenna passes through this kind of obstructed area. The strength and interval of the noise varies according to the signal strength and the conditions of deflection. <This is called multipath noise, and is a repetitive buzzing.>
4. Since FM stereo transmission and reception has a weaker field than monaural, it is often accompanied by a hissing noise.

After taking measures to prevent the noise, check that no noise occurs.

5. Change to a different station with a stronger wave to boost resistance to interference.
6. Suppress high tones to reduce noise.
7. Extend antenna completely.

If there is noise, the following causes can be considered.

8. If due to vehicle noise: It may not be possible to prevent noise if the signal is weak.
9. If due to external noise: In almost all cases, prevention on the receiver side is not possible. Weak signals especially are susceptible to interference.

If there is more noise than on radios in other vehicles, find out the noise condition and the name and frequency of the receiving stations from the owner, and consult with the radio manufacturer's service centre.

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INSPECTION PROCEDURE 5: Mixed with Noise, Only at Night (AM).

The following factors can be considered as possible causes of noise appearing at night.

1. Factors due to signal conditions: Due to the fact that long-distance signals are more easily received at night, even stations that are received without problem during the day may experience interference in a general worsening of reception conditions. The weaker a station is the more susceptible it is to interference, and a change to different station or the appearance of a beating sound* may occur.

   NOTE: Beat sound: Two signals close in frequency interfere with each other, creating a repetitious high-pitched sound. This sound is generated not only by sound signals but electrical waves as well.*
2. Factors due to vehicles noise: Alternator noise may be a cause.

DIAGNOSIS PROCEDURE

Step 1. Check that the noise still obvious even when the lamps are off.

Q: Is the noise still obvious even when the lamps are off?
YES : Go to Step 2.
NO : Go to Step 3.

Step 2. Check hat the following actions.
(1) Tune to a station with a stronger wave.
(2) Tune to a station with a stronger wave without completely extending the antenna (Mast antenna).

Q: Is there more noise than on radio in other vehicles?
YES : Consult the radio manufacturer's service centre.
NO : Check that there is no noise.

Step 3. Check that the noise fades away when the vehicle harness is moved away from the radio (if the harness is not in the proper position).

Q: Does the noise fade away when the vehicle harness is moved any from the radio (If the harness is not in the proper position)?
YES : Consult the radio manufacturer's service centre.
NO : If there is more noise than other radios, consult the radio manufacturer's service centre.

INSPECTION PROCEDURE 6: Broadcasts can be Heard but Both AM and FM have a lot of Noise.

DIAGNOSIS PROCEDURE

Step 1. Check the state of the antenna.

Q: Is the mast antenna assembled?
YES : Go to Step 2.
NO : Assemble the mast antenna. Check to see that the noise is gone.

Step 2. Check that the noise occur when the engine is stopped or the engine is running.

Q: Does noise occur when the engine is stopped or the engine is running?
When the engine is stopped : Go to Step 3.
When the engine is running : Check the vehicle's noise suppressor (Refer to Inspection Procedure 9 P.54A-105).

Step 3. Check that the following actions disappear the noise.
(1) Tune to a station with a stronger wave.
(2) Extend the antenna completely (Mast antenna).
(3) Adjust the sound quality to suppress high tones.

Q: Is the noise eliminated?
YES : Consult the radio manufacturer's service centre.
NO : Go to Step 4.

Step 4. Check that the radio is correctly earthed
The radio is connected to the earth with an assembling screw.

Q: Is the radio correctly earthed?
YES : Go to Step 5.
NO : Consult the radio manufacturer's service centre.

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Step 5. Check the connection of the antenna plug and radio and CD player.

Q: Is the antenna plug thoroughly connected to the radio and CD player?

YES : Go to Step 7.
NO : Go to Step 6.

Step 6. Check that the noise is eliminated when the antenna plug is properly attached.

Q: Is the noise eliminated?

YES : Consult the radio manufacturer's service centre.
NO : Go to Step 7.

Step 7. Check that the antenna is in good condition and is it properly mounted.

Q: Is the antenna in good condition and is it properly mounted?

YES : Consult the radio manufacturer's service centre.
NO : Either repair or replace the antenna assembly. Check to see that the noise is gone.

INSPECTION PROCEDURE 7: There is More Noise on Either AM or FM.

DIAGNOSIS PROCEDURE

There is much noise only on AM. Due to differences in AM and FM systems, AM is more susceptible to noise interference.

Step 1. Check that there is noise under the following state(s).

- A motorcycle was passing.
- Lighting was flashing.
- A vehicle passed close by, but it appeared to be a vehicle generating a particularly large amount of noise radiation.
- Passed beneath a power line.
- Passed beneath a telephone line.
- Passed close by a signal alternator.
- Passed close by some other sources of electrical noise.
- Passed under a bridge.

Q: Is there noise in the above states?

YES : Go to Step 3.
NO : Go to Step 2.

Step 2. Continue to check for static; when static is detected, check for the conditions listed above.

Q: Is there noise in the state described in Step 1?

YES : Noise prevention on the radio side is difficult. If the problem is particularly worse than other radios, consult a service centre.
NO : Go to Step 3.

Step 3. Check noise prevention on the radio side is difficult.

Q: Is the noise level worse than other radios?

YES : Consult a service centre. Noise encountered during FM reception only. Due to differences in FM and AM systems, FM is not as susceptible as AM to interference from engines, power lines, lighting, etc. On the other hand, due to the characteristics of FM waves, there are sometimes cases of noise or distortion which are generated by typical noise interference (first fading and multipath). <Noise (hissing) occurs in weak signal areas such as mountainous regions, but this is not due to Furthermore, the amount of interference will be comparatively less for vehicles equipped with a diversity antenna system*. If there is an equivalent amount of distortion in vehicles or radios of the same type, then differences will be because of differences in antenna systems, and this should be explained to the user. a problem with the radio.> Furthermore, the amount of interference will be comparatively less for vehicles equipped with a diversity antenna system*. If there is an equivalent amount of distortion in vehicles or radios of the same type, then differences will be because of differences in antenna systems, and this should be explained to the user.
NO : f the noise level is roughly the same as other radios, there is no action to be taken.

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INSPECTION PROCEDURE 8: There is Noise when Starting the Engine.

DIAGNOSIS PROCEDURE

⚠ CAUTION

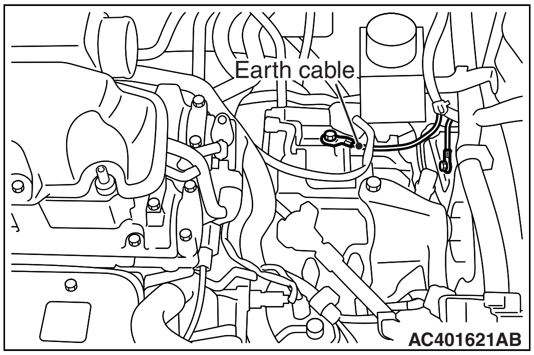
- **Connecting a high tension cable to the noise filter may destroy the noise filter and should never be done.**
- **Check that there is no external noise. Since failure to do this may result in an incorrect diagnosis due to the inability to identify the noise source, this operation must be performed.**
- **Noise prevention should be performed by suppressing strong sources of noise step by step.**

NOTE: Capacitor: The capacitor does not pass DC current, but as the number of waves increases when it passes AC current, impedance (resistance against AC) decreases, and current flow is facilitated. A noise suppressing capacitor which take advantage of this property is inserted between the power line for the noise source and the earth. This suppresses noise by earthing the noise component (AC or pulse signal) to the body of the vehicle.

NOTE: Coil: The coil passes DC current, but impedance rises as the number of waves increases relative to the AC current. A noise suppressing coil which takes advantage of this property is inserted into the power line for the noise source, and works by preventing the noise component from flowing or radiating out of the line.

Noise type sounds are in parentheses	Conditions	Cause	Remedy
AM or FM: ignition noise (popping, snapping, cracking, buzzing)	• Increasing the engine speed causes the alternator whine sound to speed up and the volume to decrease • Disappears when the ignition switch turned to "ACC."	• Mainly due to the spark plugs • Due to engine noise	• Check or replace the earth cable. • Check or replace the noise capacitor.
Other electrical components	–	Noise may occur as the electrical components become older.	Repair or replace the electrical components.
Static electricity (cracking, crinkling)	• Disappears when the vehicle is completely stopped. • Severe when the clutch is engaged	Occurs when parts or wiring move for some reason and contact metal parts of the body.	Return parts or wiring to their proper position.
Static electricity (cracking, crinkling)	• Various noise are produced depending on the body part of the vehicle.	Due to removal of the front hood, bumpers, exhaust pipe and muffler, suspension, etc.	Earth parts by bonding. Cases where the problem is not eliminated by a signal response to one area are common, due to several body parts being imperfectly earthed.

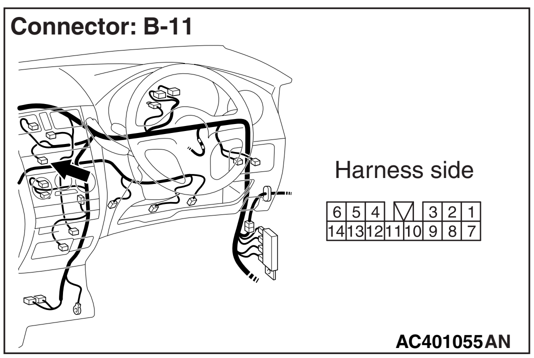
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INSPECTION PROCEDURE 9: Some Noise Appears When There is Vibration or Shocks During Travelling.

DIAGNOSIS PROCEDURE

Step 1. Connector check: Radio and CD player connector B-11.



Q: Is radio and CD player connector B-11 in good condition?
YES : Go to Step 2.
NO : Repair or replace the connector. Check that there is no noise.

Step 2. Check that noise appear when the radio switch is turned on while the vehicle is stopped and the radio is tapped while tuned away from a station.

NOTE: Static electricity noise: Body static electric from the shock absorber rubber bushings used to prevent vibration, tires, etc. occurs because of separation from the earth, causing a buzzing noise. Since no measures can be taken to discharge the static electricity of the vehicle body. Check that there is no noise.

Q: Does noise appear when the radio switch is turned on while the vehicle is stopped and the radio is tapped while tuned away from a station?
YES : . Go to Step 3.
NO : . It may be static electricity noise.

Step 3. Check that the radio correctly earthed.
The radio is connected to the earth with an assembling screw.

Q: Is the radio correctly earthed?
YES : Go to Step 4.
NO : Tighten the screw securely. Check that there is no noise.

Step 4. Check by replacing the radio and CD player.

Q: Are operations normal when using another radio and CD player?
YES : Either repair or replace the radio and CD player. Check that there is no noise.
NO : Either repair or replace the antenna assembly. Check that there is no noise.

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INSPECTION PROCEDURE 10: Noise Sometimes Appears on FM during Travelling.

DIAGNOSIS PROCEDURE

Step 1. Check the state of the antenna.

Q: Is the mast antenna assembled?
YES : Go to Step 2.
NO : Assemble the mast antenna. Check that there is no noise.

Step 2. The check after adjusting the radio.

Q: Readjust the radio. Is the noise eliminated?
YES : Check that there is no noise.
NO : Go to Step 3.

Step 3. Check with several broadcasting stations.

NOTE: Multipath noise and fading noise: Because of the frequency of FM waves in extremely high, it is highly susceptible to effects from geological formations and buildings. These effects disrupt the broadcast signal and obstruct reception in several ways.

Multipath noise

- *This describes the echo that occurs when the broadcast signal is reflected by a large obstruction and enters the receiver with a slight time delay relative to the direct signal (repetitious buzzing).*

Fading noise

- *This is a buzzing noise that occurs when the broadcast beam is disrupted by obstructing objects and the signal strength fluctuates intricately within a narrow range.*

Q: Is the abnormality in reception generated only within a certain range?
YES : . The effect of an electrical field condition (multipath noise, fading noise) could be the cause. Check that there is not noise.
NO : . Go to Step 4.

Step 4. Check that noise appears when the radio switch is turned on while the vehicle is stopped.

NOTE: Static electricity noise: Body static electric from the shock absorber rubber bushings used to prevent vibration, tires, etc. occurs because of separation from the earth, causing a buzzing noise. There is no measures to discharge the static electricity of the vehicle body. Check that there is no noise.

Q: Does noise appear when the radio switch is turned on while the vehicle is stopped and the radio is tapped while tuned away from a station?
YES : Go to Step 5.
NO : It may be static electricity noise.

Step 5. Check that the radio is correctly earthed.

The radio is connected to the earth with an assembling screw.

Q: Is the radio correctly earthed?
YES : Go to Step 6.
NO : Tighten the screw securely. Check that there is no noise.

Step 6. Check by replacing the radio and CD player.

Q: Are operations normal when using another radio and CD player?
YES : Either repair or replace the radio and CD player. Check that there is no noise.
NO : Either repair or replace the antenna assembly. Check that there is no noise.

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INSPECTION PROCEDURE 11: Ever-Present Noise.

DIAGNOSIS PROCEDURE

Noise is often created by the following factors, and often the radio is OK when it is checked individually.

- Travelling conditions of the vehicle
- Terrain of area travelled through
- Surrounding buildings
- Signal conditions
- Time period

For this reason, if there are still problems with noise even after the measures described in inspection procedure 4 to 10 have been taken, get information on the factors listed above as well as determining whether the problem occurs with AM or FM, the station names, frequencies, etc. and contact the radio manufacturer's service centre.

INSPECTION PROCEDURE 12: There is Noise but No Reception for Both AM and FM or No Sound from AM, or No Sound from FM.

DIAGNOSIS PROCEDURE

Step 1. Check the state of the antenna.

Q: Is the mast antenna assembled?

YES : Go to Step 2.

NO : Assemble the mast antenna. The radio should sound normally.

Step 2. Check to see if inspections are taking place is an area exposed to special electric fields.

Q: Are inspections taking place under special electric field conditions (underground garage, inside a building, etc.)?

YES : Go to Step 3.

NO : Go to Step 4.

Step 3. Relocate and check.

Automatically receive in a good reception area that is not exposed to special electric fields.

Q: Is reception of the strongest radio frequency possible within the area?

YES : There is no action to be taken.

NO : Go to Step 4.

Step 4. Tune then check.

Q: Did the sensitivity improve after tuning?

YES : There is no action to be taken.

NO : Go to Step 5.

Step 5. Check the connection of the antenna plug and the radio and CD player.

Q: Is the antenna plug thoroughly connected to the radio and CD player?

YES : Go to Step 6.

NO : Thoroughly connect the antenna plug and the radio and CD player. The radio should sound normally.

Step 6. Check by replacing the radio and CD player.

Q: Are operations normal when using another radio and CD player?

YES : Either repair or replace the radio and CD player. The radio should sound normally.

NO : Either repair or replace the antenna assembly. The radio should sound normally.

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INSPECTION PROCEDURE 13: Poor Reception.

DIAGNOSIS PROCEDURE

Step 1. Check the state of the antenna.

Q: Is the mast antenna assembled?
YES : Go to Step 2.
NO : Assemble the mast antenna. Check that a poor reception is resolved.

Step 2. Check to see if inspections are taking place is an area exposed to special electric fields.

Q: Are inspections taking place under special electric field conditions (underneath garage, inside a building, etc.)?
YES : Go to Step 3.
NO : Go to Step 4.

Step 3. Relocate and check.

Automatically receive in a good reception area that is not exposed to special electric fields.

Q: Is reception of the strongest radio frequency possible within the area?
YES : Check that a poor reception is resolved.
NO : Go to Step 4.

Step 4. Tune then check.

Q: Did the sensitivity improve after tuning?
YES : Check that a poor reception is resolved.
NO : Go to Step 5.

Step 5. Check with several broadcasting stations.

NOTE: Multipath noise and fading noise: Because the frequency of FM waves is extremely high, it is highly susceptible to effects from geological formations and buildings. These effects disrupt the broadcast signal and obstruct reception in several ways.

Multipath noise

- *This describes the echo that occurs when the broadcast signal is reflected by a large obstruction and enters the receiver with a slight time delay relative to the direct signal (repetitious buzzing).*

Fading noise

- *This is a buzzing noise that occurs when the broadcast beam is disrupted by obstructing objects and the signal strength fluctuates intricately within a narrow range.*

Q: Is the abnormality in reception generated only within a certain range?
YES : Check that a poor reception is resolved.
NO : Go to Step 6.

Step 6. Check the connection of the antenna plug and the radio and CD player.

Q: Is the antenna plug thoroughly connected to the radio and CD player?
YES : Go to Step 7.
NO : Thoroughly connect the antenna plug and the radio and CD player. Check that a poor reception is resolved.

Step 7. Check by replacing the radio and CD player.

Q: Does the another radio and CD player work normally?
YES : Either repair or replace the radio and CD player. Check that a poor reception is resolved.
NO : Either repair or replace the antenna assembly. Check that a poor reception is resolved.

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INSPECTION PROCEDURE 14: Distortion on AM or on Both AM and FM.

DIAGNOSIS PROCEDURE

Step 1. Check the degree in which distortion is generated.

Q: How much distortion is generated?
Occasional distortion : Go to Step 2.
Constant distortion : Go to Step 3.

Step 2. Check by the transmission antenna.

Q: Is there distortion by the transmission antenna?
YES : The input from the antenna is too big.
NO : Go to Step 3.

Step 3. Check how the speakers are setup.

Q: Are any cords coming in contact with the paper cones of the speakers?
YES : Move the cords so that they do not come in contact with the paper cones of the speaker. Check that a distortion is resolved.
NO : Go to Step 4.

Step 4. Check the speakers.

1. Remove the speakers.
2. Check to see if there is any ripping of the paper cones or any foreign obstacles in the paper cone.

Q: Are the speakers normal?
YES : Go to Step 5.
NO : Repair or replace the speakers. Check that a distortion is resolved.

Step 5. Check how the speakers are setup.

Q: Check to see if the speakers are setup in a deformed manner.
YES : Correct the way the speakers are setup so they are securely setup. Check that a distortion is resolved.
NO : Repair or replace the radio and CD player. Check that a distortion is resolved.

INSPECTION PROCEDURE 15: Distortion on FM Only.

DIAGNOSIS PROCEDURE

Step 1. Check with another broadcasting station.

Q: Is there distortion when turning to another broadcasting station?
YES : Go to Step 2.
NO : The signal from that station is too weak.

Step 2. Relocate the reception area and check.

Q: When relocating the reception area does the distortion increase or decrease?
YES : The cause may be multipath noise.
NO : Repair or replace the radio and CD player. Check that a distortion is resolved.

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INSPECTION PROCEDURE 16: Using the Auto Select Function, Too Few Automatic Stations are Selected.

DIAGNOSIS PROCEDURE

Step 1. Check the state of the antenna.

Q: Is the mast antenna assembled?

YES : Go to Step 2.
NO : Assemble the mast antenna. The auto-select function should operate normally.

Step 2. Check the number of radio stations.

Q: Are there sufficient numbers of radio stations within the area?

YES : Go to Step 3.
NO : Go to Step 4.

Step 3. Check the distance from the transmission antenna.

Q: Is there a transmission antenna within a range of 2 miles?

YES : Go to Step 5.
NO : Go to Step 4.

Step 4. The check if there are not that many radio stations and when there is no transmission antenna in the vicinity.

Execute automatic selection and check to see that the strongest radio frequency is receivable within the area.

Q: Is reception of the strongest radio frequency possible within the area?

YES : There is no action to be taken.
NO : Go to Step 5.

Step 5. Check to see if inspections are taking place is an area exposed to special electric fields.

Q: Are inspections taking place under special electric field conditions (underneath garage, inside a building, etc.)?

YES : Go to Step 6.
NO : Go to Step 7.

Step 6. Relocate and check.

Automatically receive in a good reception area that is not exposed to special electric fields.

Q: Is reception of the strongest radio frequency possible within the area?

YES : There is no action to be taken.
NO : Go to Step 7.

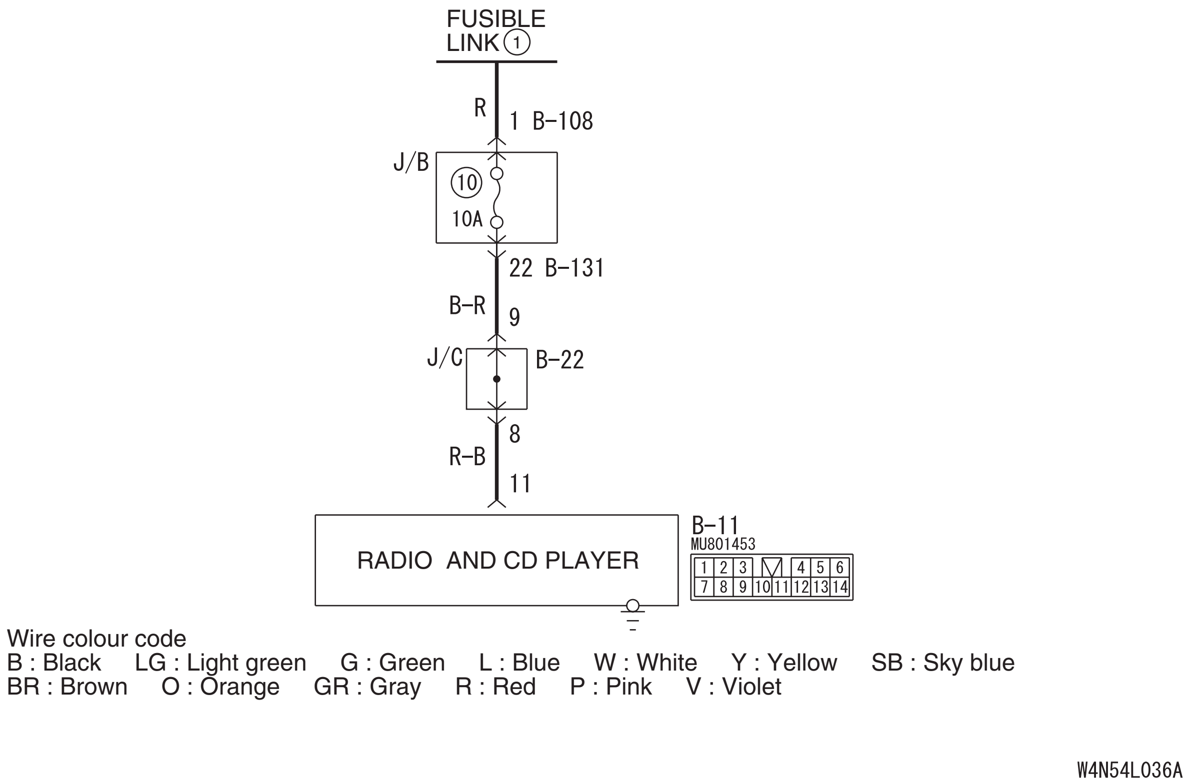
Step 7. Check the connection of the antenna plug and the radio and CD player.

Q: Is the antenna plug thoroughly connected to the radio and CD player?

YES : Repair or replace the radio and CD player. The auto-select function should operate normally.
NO : Thoroughly connect the antenna plug and the radio and CD player. The auto-select function should operate normally.

Inspection Procedure 17: Preset Station are Erased.

Memory Backup Power Circuit



COMMENTS ON TROUBLE SYMPTOM

The cause is probably a faulty radio and CD player memory backup power supply circuit system.

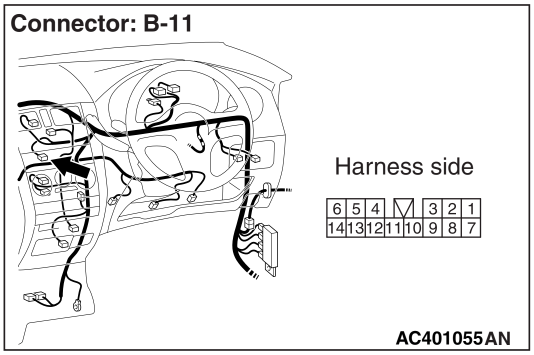
POSSIBLE CAUSES

- Damaged wiring harness or connector.
- Malfunction of the radio and CD player.

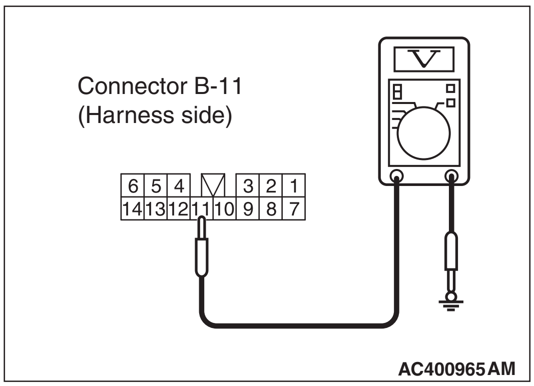
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DIAGNOSIS PROCEDURE

Step 1. Voltage measurement at radio and CD player connector B-11.



(1) Disconnect radio and CD player connector B-11.



(2) Measure the voltage between terminal number 11 and earth.

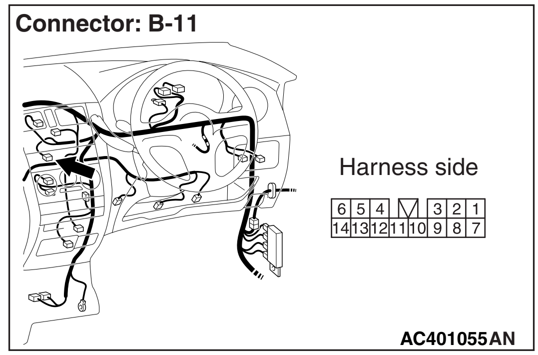
OK: Battery positive voltage

Q: Does the measured voltage correspond with this range?

When YES <radio and CD player does not execute memory save then.> : . Either repair or replace the radio and CD player. Check that a memory is retained.

NO : . Go to Step 2.

Step 2. Connector check: Radio and CD player connector B-11.



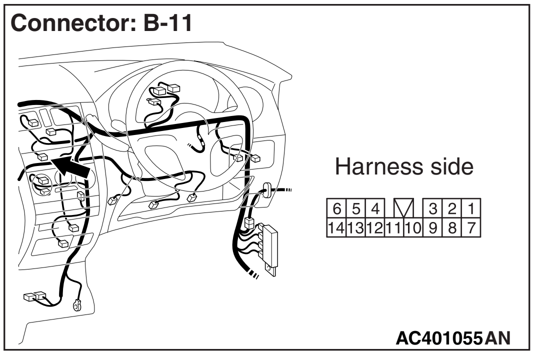
Q: Is radio and CD player connector B-11 in good condition?

YES : Go to Step 3.

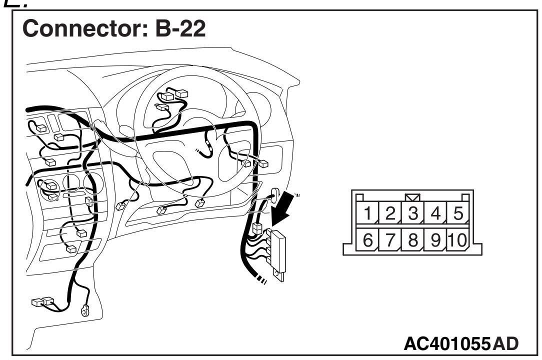
NO : Repair or replace the damage component(s). Check that a memory is retained.

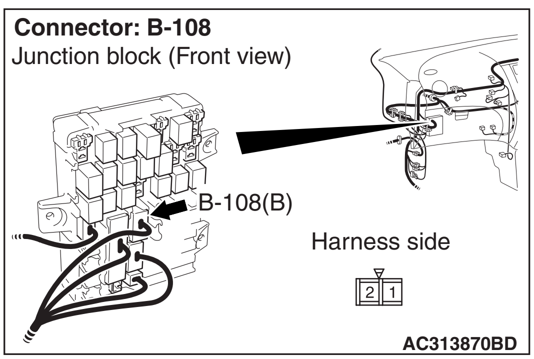
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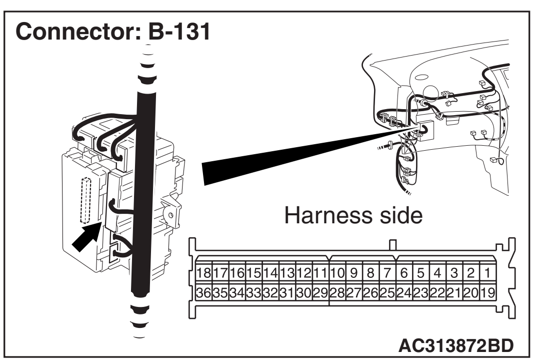
Step 3. Check the wiring harness between radio and CD player connector B-11 (terminal 11) and fusible link 1 (battery).



NOTE:







Prior to the wiring harness inspection, check joint connector B-22, junction block connectors B-108 and B-131 and repair if necessary.

Q: Are the wiring harness between radio and CD player connector B-11 (terminal 11) and fusible link 1 (battery) in good condition?

YES : Repair or replace the radio and CD player. Check that a memory is retained.

NO : Repair or replace the damage component(s). Check that a memory is retained.

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INSPECTION PROCEDURE 18: CD can Not be Inserted.

DIAGNOSIS PROCEDURE

Step 1. Check that a CD has been already loaded.

Q: Has a CD been already loaded?

NO : Go to Step 2.

YES : Take out the CD (If the CD can not be ejected, refer to INSPECTION PROCEDURE 22 P.54A-116). Check that a CD can be inserted.

Step 2. Check how a CD is inserted.

- Ensure that the ignition switch is at "ACC" or "ON".

NOTE: If you try to load a CD when the ignition switch is at the positions other than "ACC" or "ON", the CD will not be inserted completely and then rejected.

Q: If you try to load the CD, does the CD stops halfway and then rejected?

YES : Refer to INSPECTION PROCEDURE 22 P.54A-116.

NO : Go to Step 3.

Step 3. Check after the CD is loaded.

NOTE: . Even though the CD is loaded, "E" (error) is sometimes displayed with the CD rejected because of vibration/shock or dew on the CD face or optical lens.

Q: Though the CD is inserted completely, is "E" (error) displayed and the CD ejected?

YES : . Go to Step 4.

NO : . The procedure is complete.

Step 4. Check the CD.

Check the CD for the conditions below:

- Is the CD loaded with its label facing down?
- Is the recorded face dirty or scratched?
- Is there dew on the recorded face?

Q: Is the CD in good condition?

YES : Go to Step 5.

NO : The original CD is defective. Check that a CD can be inserted.

Step 5. Check again using a normal CD, which is not dirty or scratched.

- Load another normal CD.
- Check that the CD player recognizes and play the CD.

Q: When you substitute another normal CD, is the CD loaded correctly?

YES : The original CD is defective. Check that a CD can be inserted.

NO : Replace the radio and CD player. The procedure is complete.

INSPECTION PROCEDURE 19: No Sound. (CD only)

DIAGNOSIS PROCEDURE

Step 1. Check again using a normal CD, which is not dirty or scratched.

Q: When you substitute another normal CD, is the CD played normally?

YES : The original CD is defective. The CD player should sound normally.

NO : Go to Step 2.

Step 2. Check power supply to the CD player when the ignition switch is at "ACC" or "ACC".

Q: Is the radio and CD player energized when the ignition switch is turned to the "ACC" or "ON position?

YES : Replace the radio and CD player. The procedure is complete.

NO : Check the power supply circuit. Refer to Inspection Procedure 1 P.54A-93.

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INSPECTION PROCEDURE 20: CD Sound Skips.

DIAGNOSIS PROCEDURE

Step 1. Check the state in which the sound on the CD jumps.

Q: Does the sound jump when the car is parked?
YES : Go to Step 2.
NO : Go to Step 4.

Step 2. Check the surface of the CD.

Q: Are there any scratches or soiling on the CD?
YES : The CD is defective if there are any scratches. Clean the CD surface if it is dirty. Check that a CD sound skip is resolved.
NO : Go to Step 3.

Step 3. Check when replacing with a CD that can be played normally without any scratches or soiling.

Q: Does the CD play normally when replaced with a CD that is not scratched or dirty and can play normally?
YES : Defective CD used. Check that a CD sound skip is resolved.
NO : Go to Step 4.

Step 4. Check by tapping the radio and CD player.

NOTE: Check by using a proper CD which is free from scratches, dirt or any other abnormality.

Q: Does the sound jump when tapping the radio and CD player?
YES : Securely mount the radio and CD player. Check that a CD sound skip is resolved.
NO : Either repair or replace the radio and CD player. (Take the following measures if a servicing shop is closely).

1. Investigate in detail the state when the sound jumps while driving the car.
2. Describe the state to the service shop for consultation.
3. Either repair or replace the radio and CD player according to the instructions of the service shop.

Check that a CD sound skip is resolved.

INSPECTION PROCEDURE 21: Sound Quality is Poor.

DIAGNOSIS PROCEDURE

Check to see that the CD can be played normally and that it is free of any scratches or soiling.
Replace with better sound quality CD.

Q: Is the sound quality better replacing the CD with a clean CD without any scratches that can be played?
YES : Defective CD used. The sound quality should return to normal.
NO : Either repair or replace the radio and CD player. The sound quality should return to normal.

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INSPECTION PROCEDURE 22: CD can not be Ejected.

DIAGNOSIS PROCEDURE

Check the power of ignition switch "ACC".

Q: Does the radio and CD player power turn ON when the ignition switch is in the "ACC" or "ON" position?

YES : Replace the radio and CD player. Check that a CD can be ejected normally.

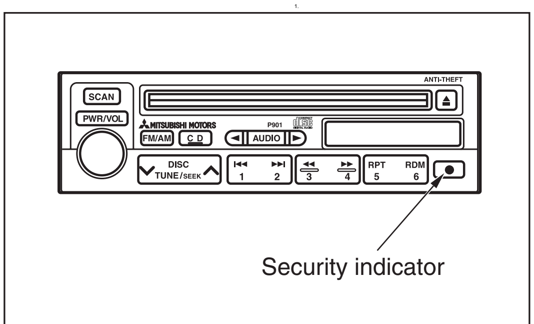
NO : Check the power supply circuit. Refer to Inspection Procedure 1 P.54A-93.

ON-VEHICLE SERVICE

PROCEDURE FOR INPUT OF SECURITY CODE FOR ANTI-THEFT SYSTEM

M1544004400304

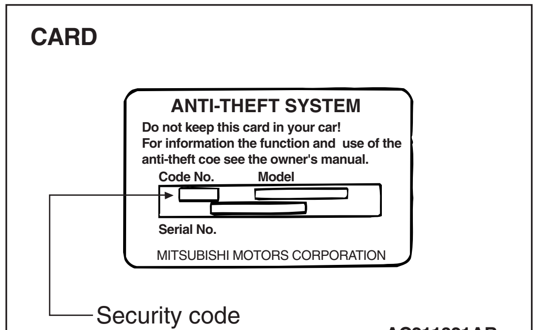
The radio and CD player do not work under the following conditions:



AC211319AB

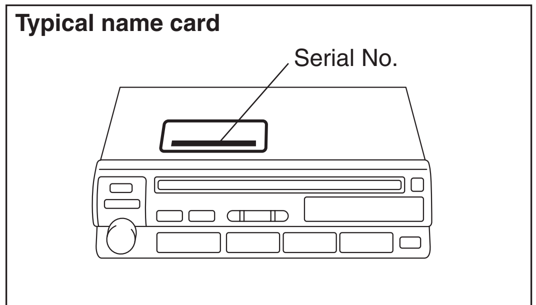
If the ignition key is removed, the security indicator of this radio and CD player flickers to prevent theft from happening.

2. Power supply to the radio and CD player has been suspended for more than an hour continuously by removing the cable from the battery terminal or disconnecting the harness connectors.
3. The power supply to the radio and CD player has been suspended for more than an hour due to a blown fuse or discharged battery.
4. If the radio and CD player do not work for these conditions, enter the security code as follows:
5. The radio and CD player has been replaced.



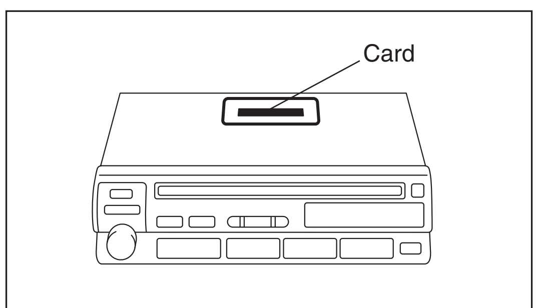
AC211321AB

1. Confirm the security code using any of the following methods.
   (1) Use the security code indicated on the cards retained in the vehicle.



AC211322AB

   (2) If the security code is unknown owing to the owner's loss of the card:
      a. Remove the radio and CD player referring to P.54A-119.
      b. Read the serial number stamped on the radio and CD player.
      c. Look up the security code (anti-theft code table) corresponding to the serial number.



AC211323AB

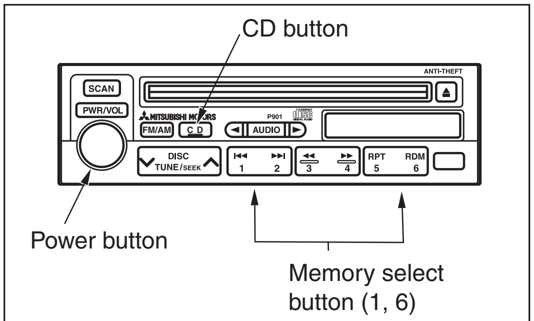
   (3) When the radio and CD player is replaced: Use the security code on the cards attached to the upper surface of the replacement radio and CD player.

   NOTE: Deliver the two cards to the owner.

2. Connect the radio to the vehicle harness.

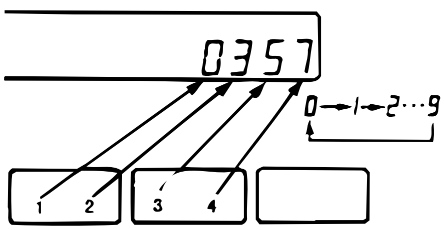
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3. Turn the ignition key to the "ACC" or "ON" position.



AC211324 AB

4. Press the "PWR" button, and "CODE" will be displayed.

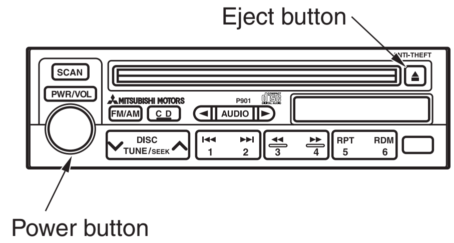


ACX01948

5. Press number 1 through number 4 memory select button to set the four-digit security code shown on the card. Every time each digit key is pressed, the figure changes as follows: 0 to 1 to 2 to 3 to 4 to 5 to 6 to 7 to 8 to 9 to 0
6. Press the "CD" button, and a beep will be heard. If entered correctly, the radio and CD player will work.
7. If the security code is not accepted, "1Err" is displayed. In a few seconds, it will change to "CODE." Then repeat steps 5 and 6.

   NOTE:
   - *The anti-theft system will allow three attempts maximum to input the correct code.*
   - *The second error is displayed as "2 Err." When the third error is made, "3 Err" is displayed and then the display changes to "OFF." If this should occur, the unit will not work any more.*
   - *To input the security code again, turn the ignition switch to the "ACC" or "ON" position and wait for one hour when "OFF" is displayed. After "OFF" disappears on the display and changes into "CODE" the security code can be input again.*

THREE-MINUTE OPERATION MODE



AC211324 AC

To facilitate replacement or check, the radio and CD player can be operated for three minutes without inputting the security code.

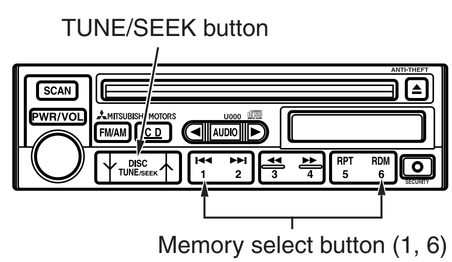
1. Press the "PWR" button and "EJECT" button together to operate the radio and CD player.
2. In three minutes the unit will not be able to work. Then the radio and CD player will be switched off.

SPEAKER TEST

M1544005400396

Enter the speaker test mode according to the following steps:

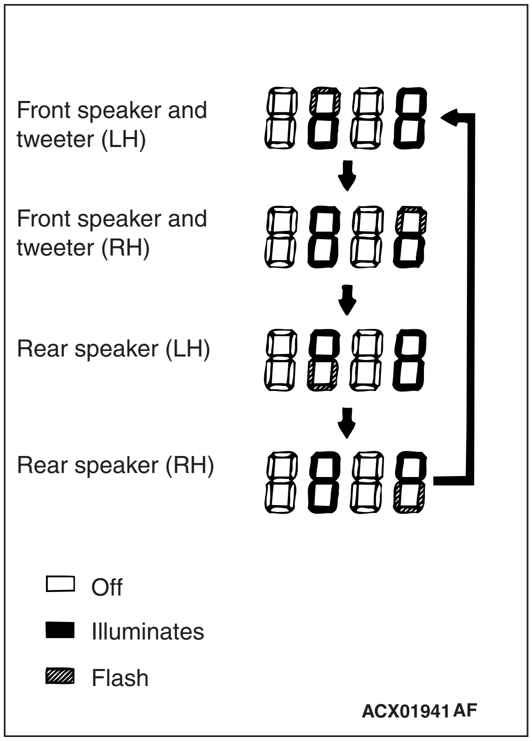
1. Turn the Ignition switch to the "ACC" or "ON" position and switch off the radio and CD player.



AC401635 AB

2. Press the following buttons in that order within sixty seconds from step (1).
   (1) Memory select "1" button
   (2) "TUNE/SEEK (DOWN)" button
   (3) "TUNE/SEEK (UP)" button
   (4) Memory select "6" button

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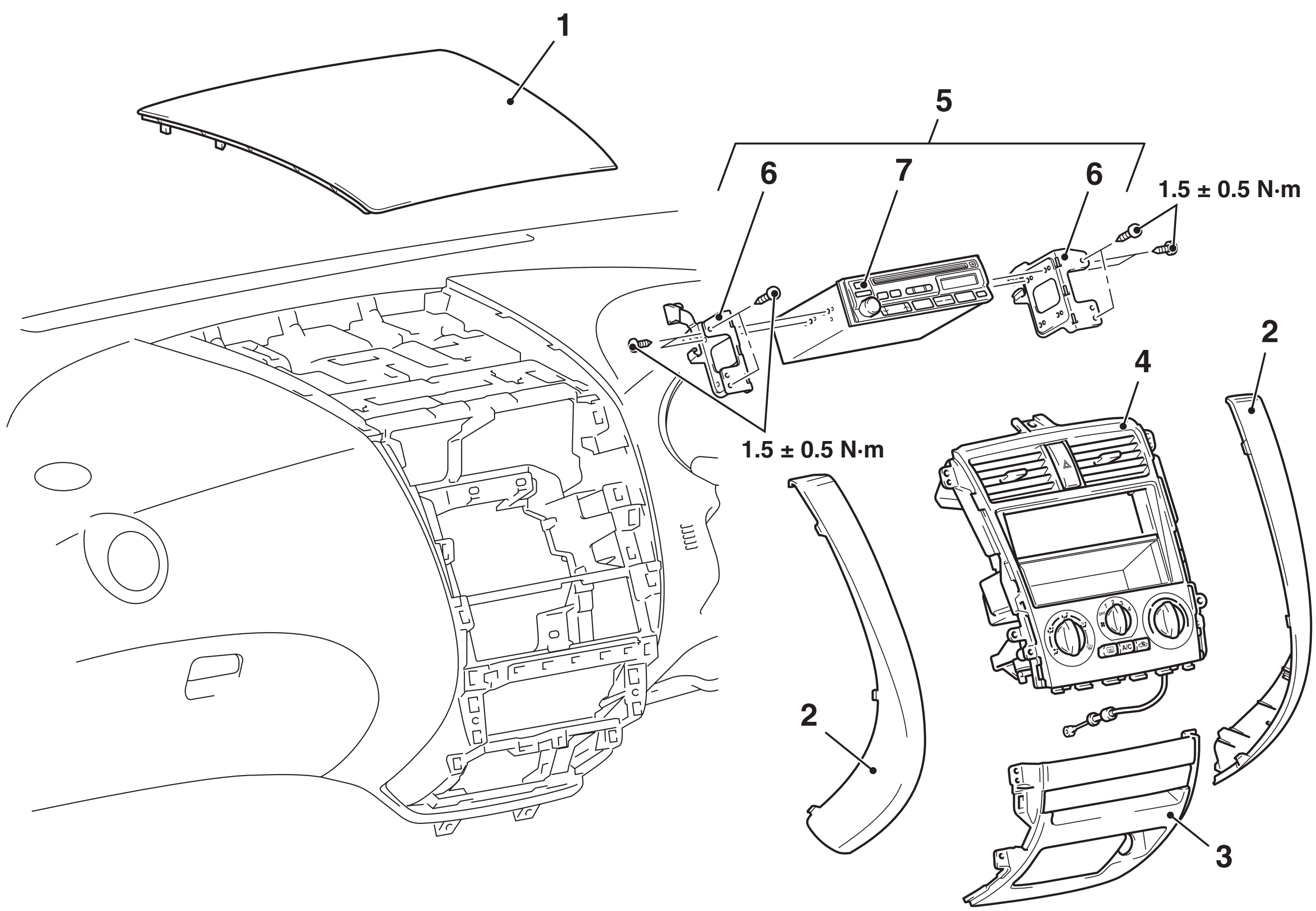
3. Check that the speaker, which is displayed on the radio panel display, sounds (If the memory select "6" button is pressed, the speaker will be changed).
4. If a button other than the memory select "6" button and "EJECT" button (CD) is pressed, or the ignition switch is turned to "LOCK" (OFF) position, you will exit from the speaker test mode.

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RADIO AND CD PLAYER

REMOVAL AND INSTALLATION

M1544011500024



Removal steps

1. Upper centre panel (Refer to GROUP 52A, Instrument Panel Assembly P.52A-3.)
2. Console panel (Refer to GROUP 52A, Instrument Panel Assembly P.52A-3.)

Removal steps (Continued)

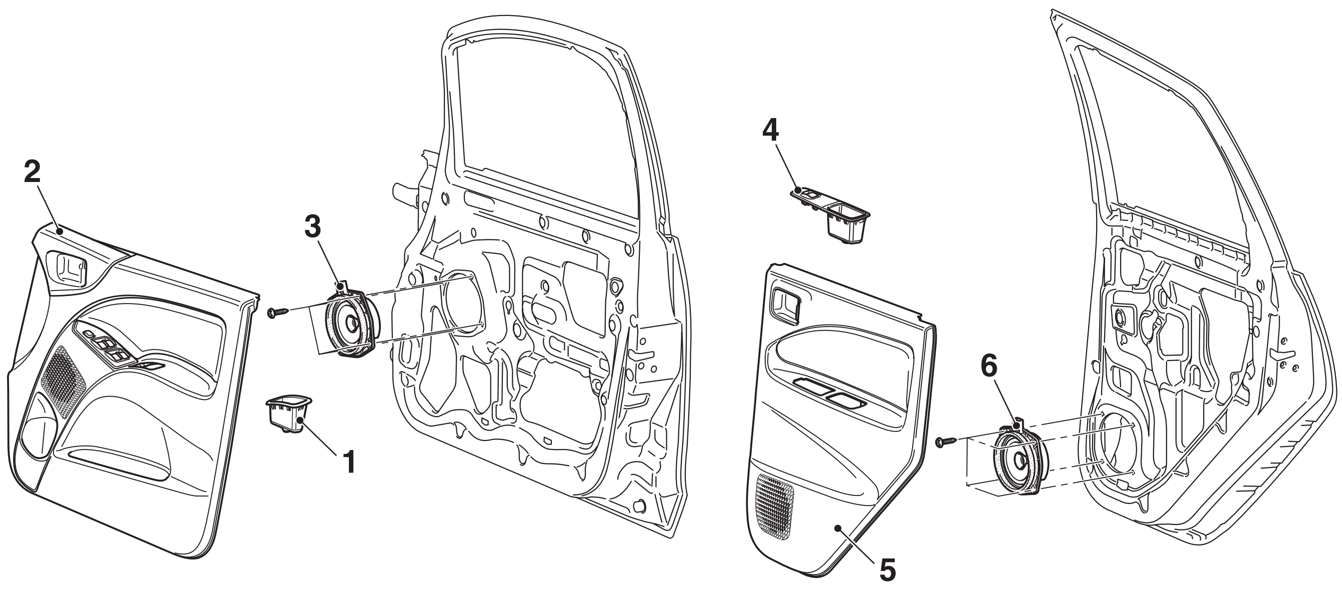
3. Lower contre panel (Refer to GROUP 52A, Instrument Panel Assembly P.52A-3.)
4. Heater control panel (Refer to GROUP 52A, Instrument Panel Assembly P.52A-3.)
5. Radio and CD player assembly
6. Bracket
7. Radio and CD player

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SPEAKER

REMOVAL AND INSTALLATION

M1544002600669



Front speaker removal steps

1. Pull handle box
2. Front door trim (Refer to GROUP 52A, Door trim P.52A-13.)
3. Front speaker

Rear speaker removal steps

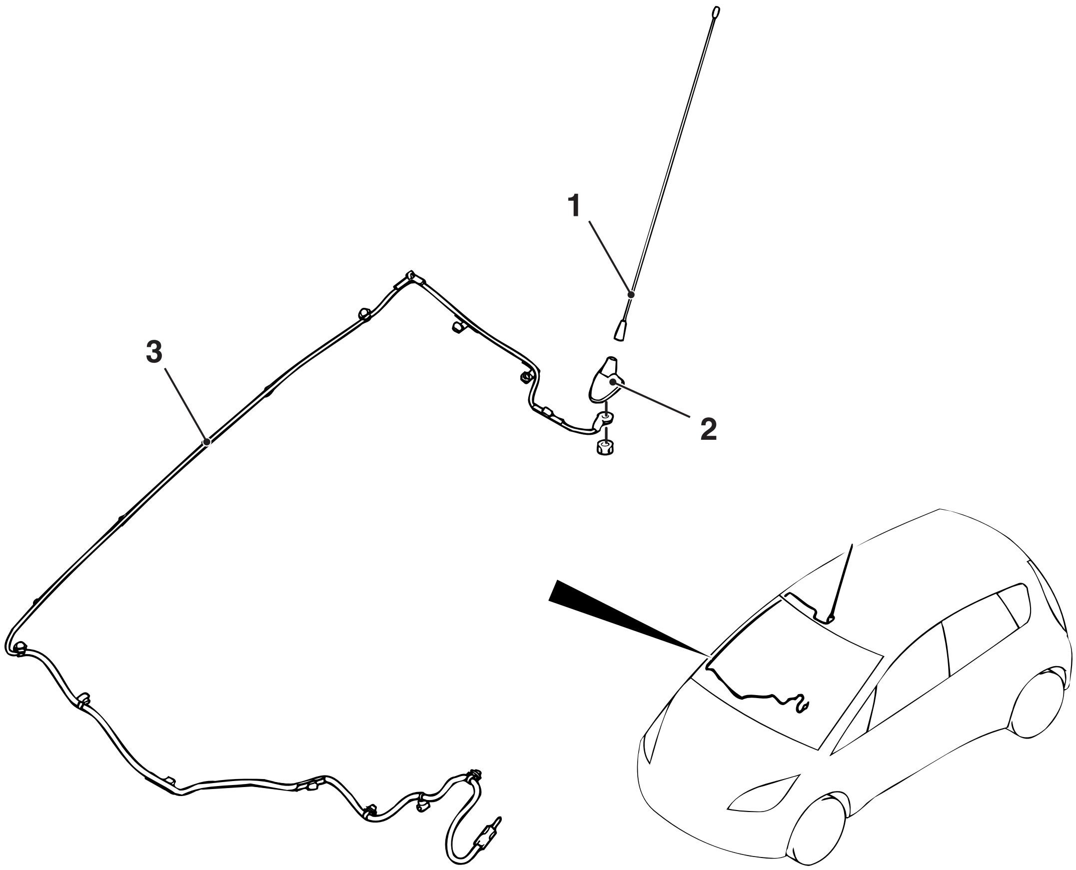
4. Power window switch assembly
5. Rear door trim (Refer to GROUP 52A, Door trim P.52A-13.)
6. Rear speaker

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ROOF ANTENNA

REMOVAL AND INSTALLATION

M1544006400087



Removal steps

1. Roof antenna pole
- Headlining (Refer to GROUP 52A, Headlining P.52A-16.)
2. Roof antenna base

Removal steps (Continued)

- Instrument panel assembly (Refer to GROUP 52A, Instrument panel assembly P.52A-3.)
3. Antenna feeder cable

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DEFOGGER

TROUBLESHOOTING

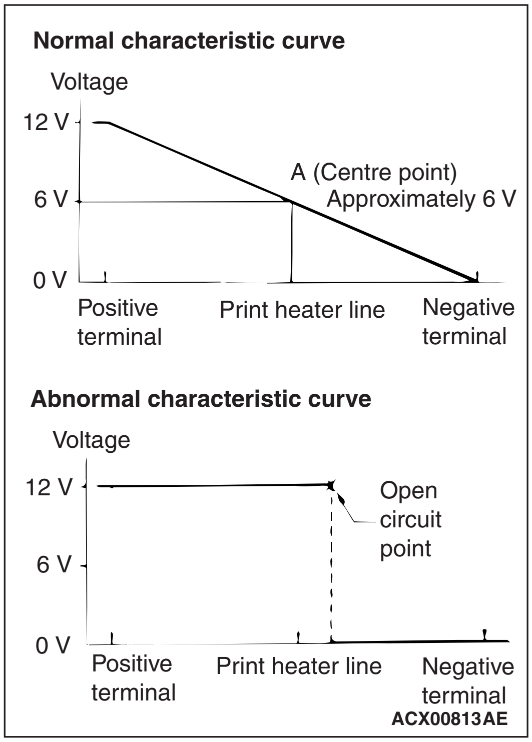
M1543019600419

Refer to GROUP 55A, Troubleshooting P.55A-10.

ON-VEHICLE SERVICE

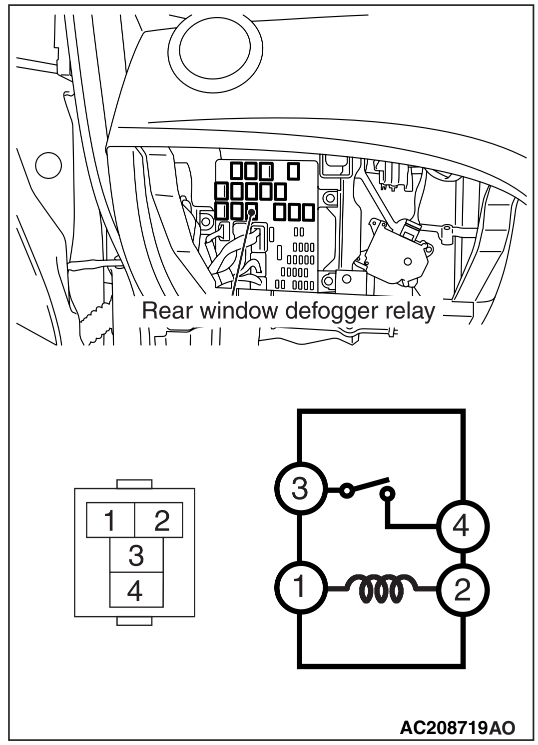
PRINTED HEATER LINES CHECK

M1543019504618



1. Run engine at 2,000 r/min. Check heater element with battery at full.
2. Turn "ON" rear window defogger switch. Measure heater element voltage with circuit tester at rear window glass centre A. Condition is good if it indicates about six volts.
3. If 12 volts is indicated at A, there is a break in the negative terminals from A. Move test bar slowly to negative terminal to detect where voltage changes suddenly (0 volts).
4. If 0 volts is indicated at A, there is a break in the positive terminals from A. Defect where the voltage changes suddenly (12 volts) in the same method described above.

REAR WINDOW DEFOGGER RELAY CHECK



Battery voltage	Tester connection	Specified condition
Not supplied	3 – 4	Open circuit
• Connect terminal1 to the positive battery terminal • Connect terminal 2 to the negative battery terminal	3 – 4	Continuity exists (2 Ω or less)

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Group TOC

DEFOGGER SWITCH

REMOVAL AND INSTALLATION

M1543030800065

<VEHICLES WITH MANUAL AIR CONDITIONER>

Refer to GROUP 55A, Heater Control Assembly P.55A-54.

<VEHICLES WITH AUTOMATIC AIR CONDITIONER>

Refer to GROUP 55B, Automatic Air Conditioner Panel Assembly P.55B-29.